

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sim J. Lee Examiner #: 7.6060 Date: 3-22-2006
 Art Unit: 1752 Phone Number 301-2-1333 Serial Number: 101816,502
 Mail Box and Bldg/Room Location: 9D60 Results Format Preferred (circle): PAPER DISK E-MAIL
(Rem.)

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Ph. See Bib.

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for a photoacid generator
 that has, as anion, a carborane based group.

Examples of such anion are shown

in the attachment. (Some structures have

closed ("close")

structures

and a couple of

them have open

carborane structure

SCIENTIFIC REFERENCE BR
 Sci. & Tech. Info. Cntr

MAR 23

Pat. & T.M. Office

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

Searcher: <u>Ed</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>3-23-06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____

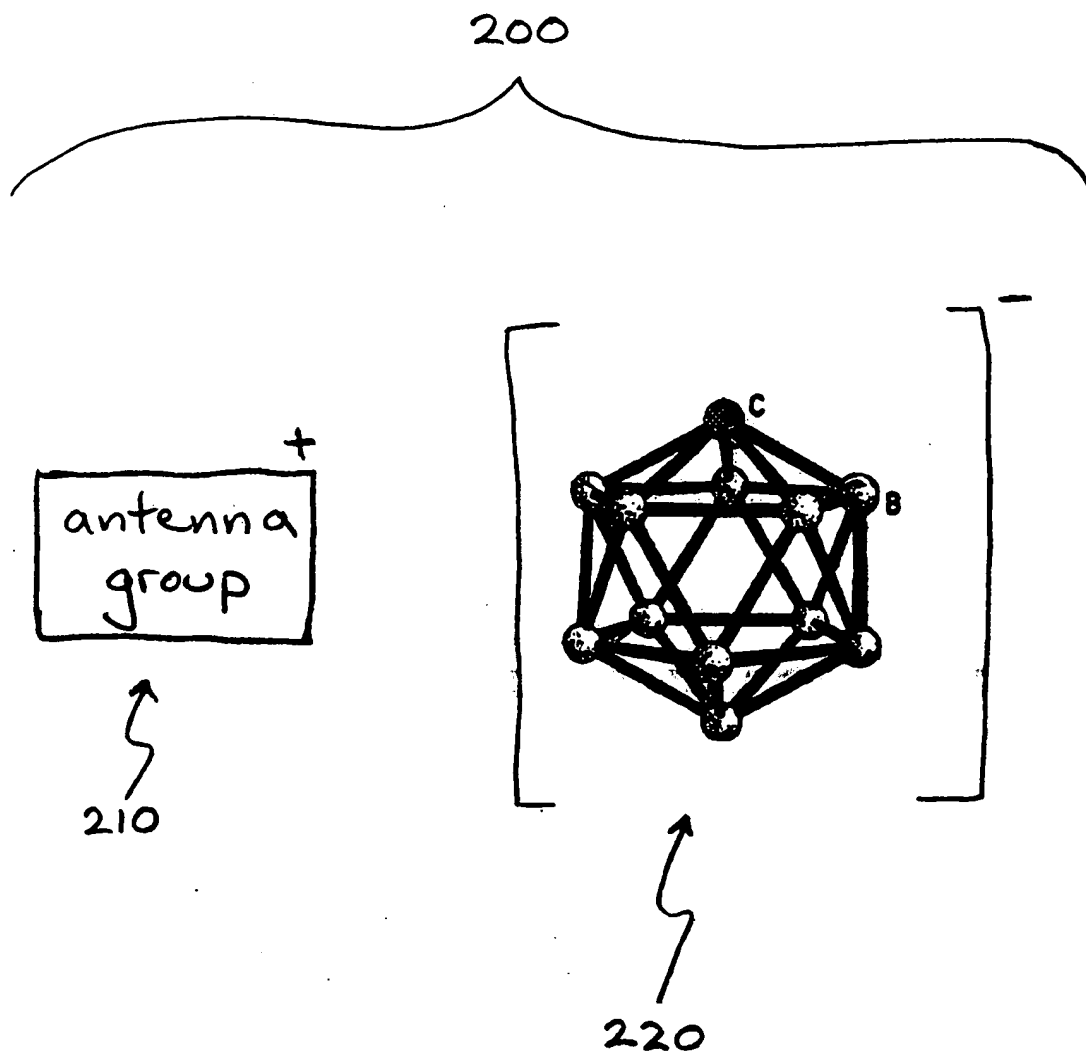


Fig. 2a

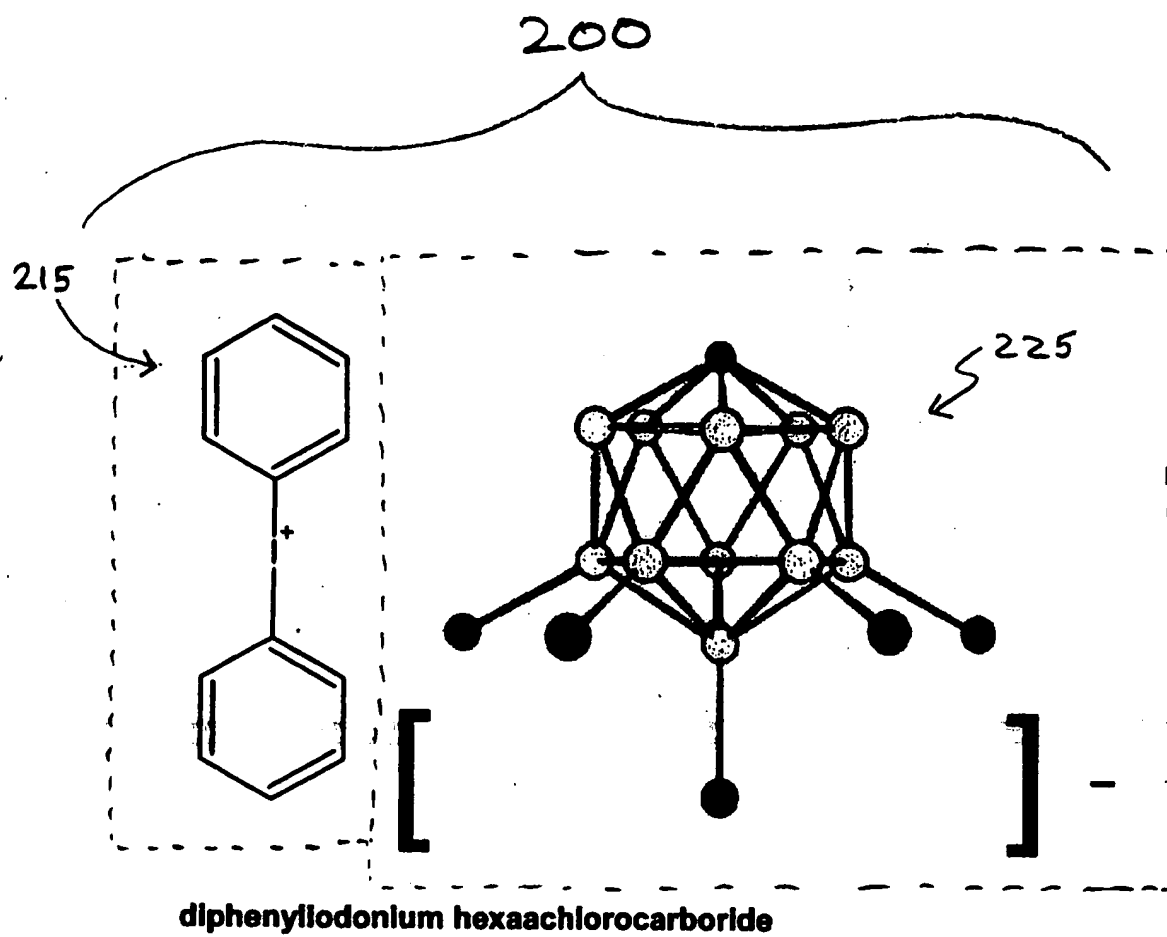
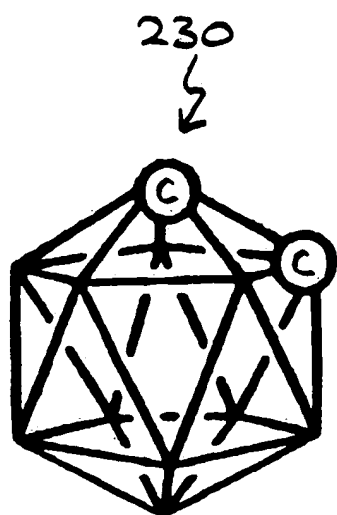
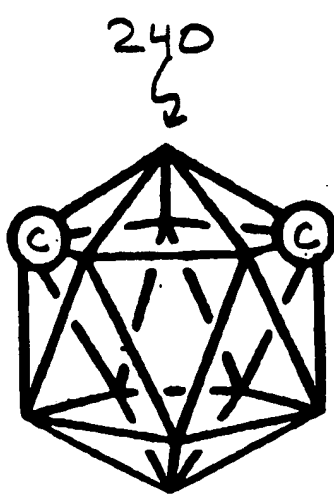


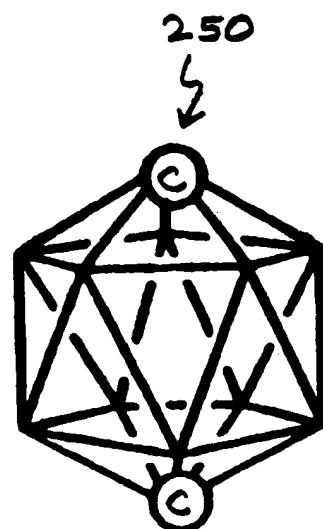
Figure 2b



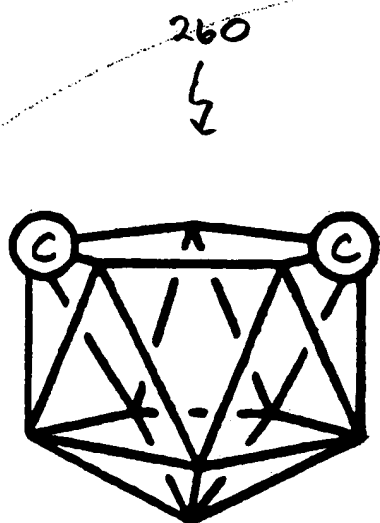
ortho-carborane



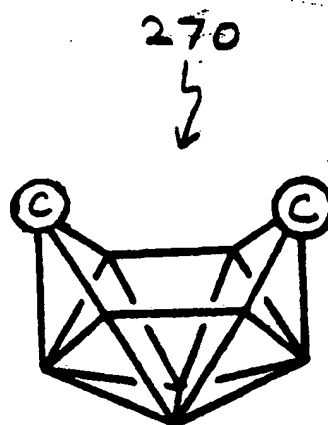
meta-carborane



para-carborane



nido-carborane



arachno-carborane

Figure 2c

These two have
open carborane
structures

255



(-)

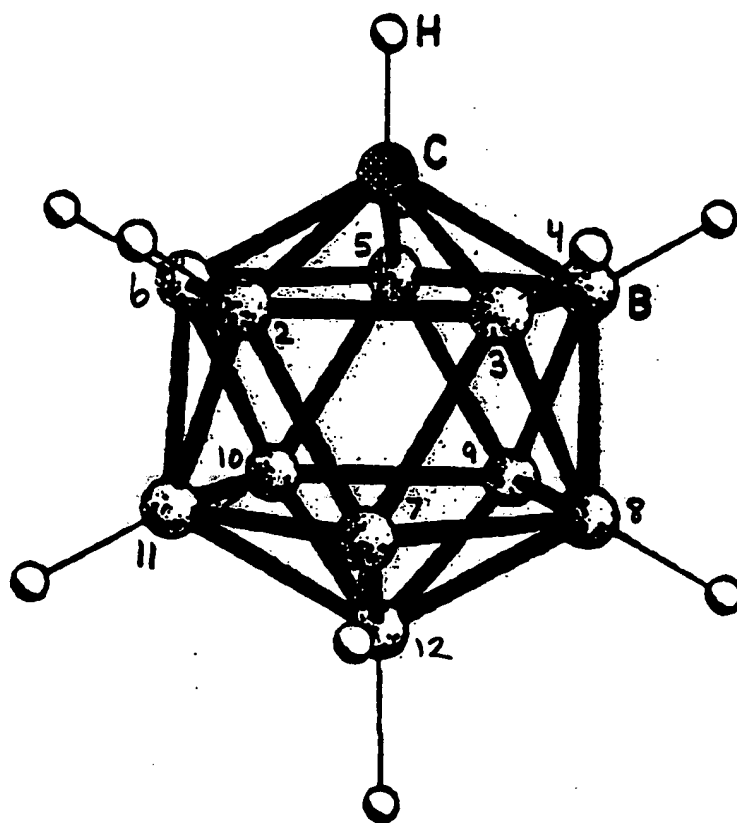


Figure 2d

=> file reg

FILE 'REGISTRY' ENTERED AT 12:25:33 ON 23 MAR 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 American Chemical Society (ACS)

=> d his

FILE 'LREGISTRY' ENTERED AT 11:20:00 ON 23 MAR 2006
L1 66 S ?CARBORAN?/CNS
E C B/RELF
L2 192 S E3

FILE 'REGISTRY' ENTERED AT 11:25:44 ON 23 MAR 2006
L3 20777 S L2
L4 19492 S L3 NOT PMS/CI

FILE 'HCA' ENTERED AT 11:27:03 ON 23 MAR 2006
L5 7260 S L4
L6 15331 S PAG OR PAGES OR P(W)A(W)G OR PHOTOACID? OR PHOTOGENERA?
L7 4 S L5 AND L6

FILE 'LCA' ENTERED AT 11:27:41 ON 23 MAR 2006
L8 32138 S (PRODUC? OR PROD# OR GENERAT? OR MANUF? OR MFR# OR CREA

FILE 'HCA' ENTERED AT 11:28:57 ON 23 MAR 2006
L9 814429 S (PRODUC? OR PROD# OR GENERAT? OR MANUF? OR MFR# OR CREA
L10 437 S L5 AND L9
L11 3388 S SUPERACID? OR SUPER(2A)ACID?
L12 4 S L10 AND L11
L13 57 S MEAGLEY ?/AU
L14 11 S L13 AND (L6 OR L11)
L15 109245 S LITHO? OR PHOTOLITHO? OR CHROMOLITHO?
L16 173629 S RESIST OR RESISTS OR PHOTORESIST? OR MASK? OR PHOTOMASK
L17 86529 S IC OR ICS OR INTEGRA?(2A)CIRCUIT? OR VLSI?
L18 9 S L5 AND L15
L19 14 S L5 AND L16
L20 2 S L5 AND L17
L21 6323 S ?CARBORAN?
L22 5 S L21 AND L6
L23 16 S L21 AND L11
L24 7 S L21 AND L15
L25 15 S L21 AND L16
L26 6 S L21 AND L17
L27 50 S L7 OR L12 OR L18 OR L19 OR L20 OR L22 OR L23 OR L24 OR

L28 34 S L27 AND L5
L29 16 S L27 NOT L28

=> file hca

FILE 'HCA' ENTERED AT 12:25:48 ON 23 MAR 2006

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

=> d 128 1-34 cbib abs hitstr hitind

L28 ANSWER 1 OF 34 HCA COPYRIGHT 2006 ACS on STN

144:29605 Specifics of the generation of singlet oxygen into the gas phase during the photoexcitation of sputtered layers of **carboranylporphyrins**. Timashev, P. S.; Solov'eva, A. B.; Zav'yalov, S. A.; Glagolev, N. N.; Ol'shevskaya, V. A. (Karpov Research Institute of Physical Chemistry (State Scientific Center of the Russian Federation), Moscow, 103064, Russia). Russian Journal of Physical Chemistry, 79(2), 276-283 (English) **2005** CODEN: RJPCAR. ISSN: 0036-0244. Publisher: Pleiades Publishing, Inc..

AB Synthesis of a no. of **carboranylporphyrins** (CPs), as well as the results of studying the structure of sputtered layers of the CPs and the **photogeneration** of gaseous singlet oxygen on these layers, are described. The presence of **carboranes**, bulky side substituents with well-pronounced electron-acceptor properties, in the mols. of the CPs detcs. the specifics of the structure of sputtered layers of the CPs on various spatial scales and the electronic excitation of CP mols. in these layers, features that can influence the activity of the CPs in photocatalytic processes. The structure of the sputtered layers of the CPs on the scales from tens of nanometers to tens of microns was studied using at. force microscopy. The rate of the photosensitized generation of singlet oxygen on sputtered layers of the CPs was demonstrated to be dependent on the chem. structure of the CP, in particular, its electron-acceptor substituent, and on the structure of the sputtered layer at spatial scales up to several fractions of a micrometer.

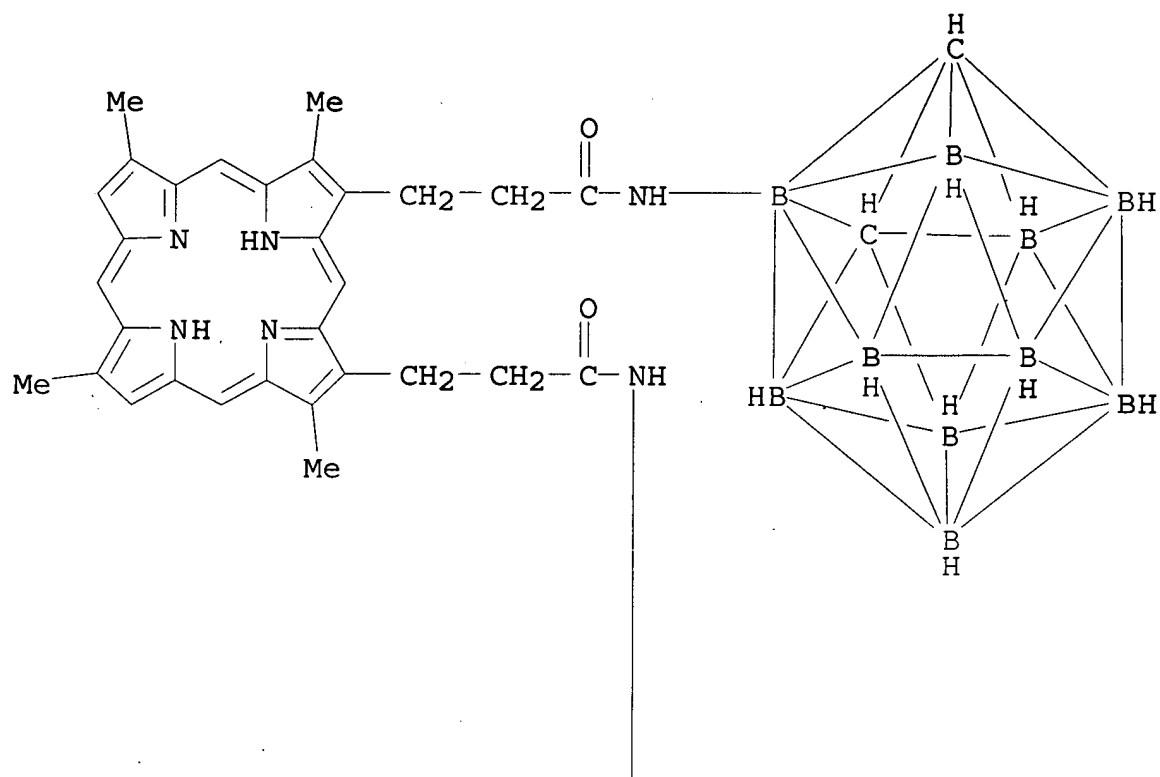
IT 264911-57-1P 264911-62-8P 685128-29-4P
870483-72-0P 870483-73-1P

(generation of singlet oxygen into gas phase during photoexcitation of sputtered layers of **carboranylporphyrins**)

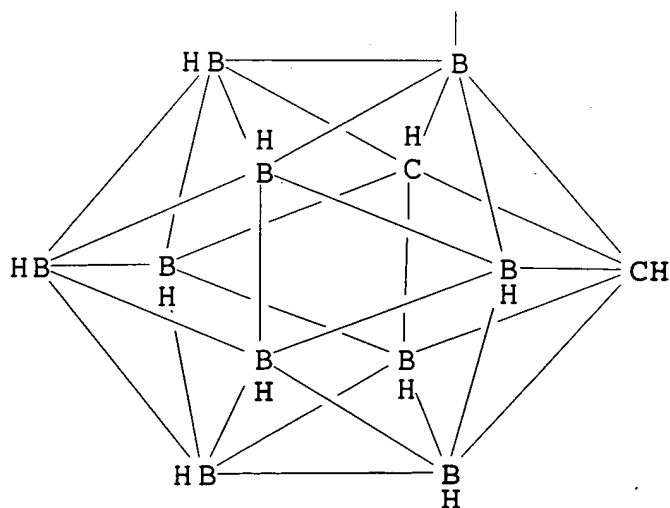
RN 264911-57-1 HCA

CN 21H,23H-Porphine-2,18-dipropanamide, N,N'-bis(1,2-dicarbadodecaboran(12)-3-yl)-3,7,12,17-tetramethyl- (9CI) (CA INDEX NAME)

PAGE 1-A

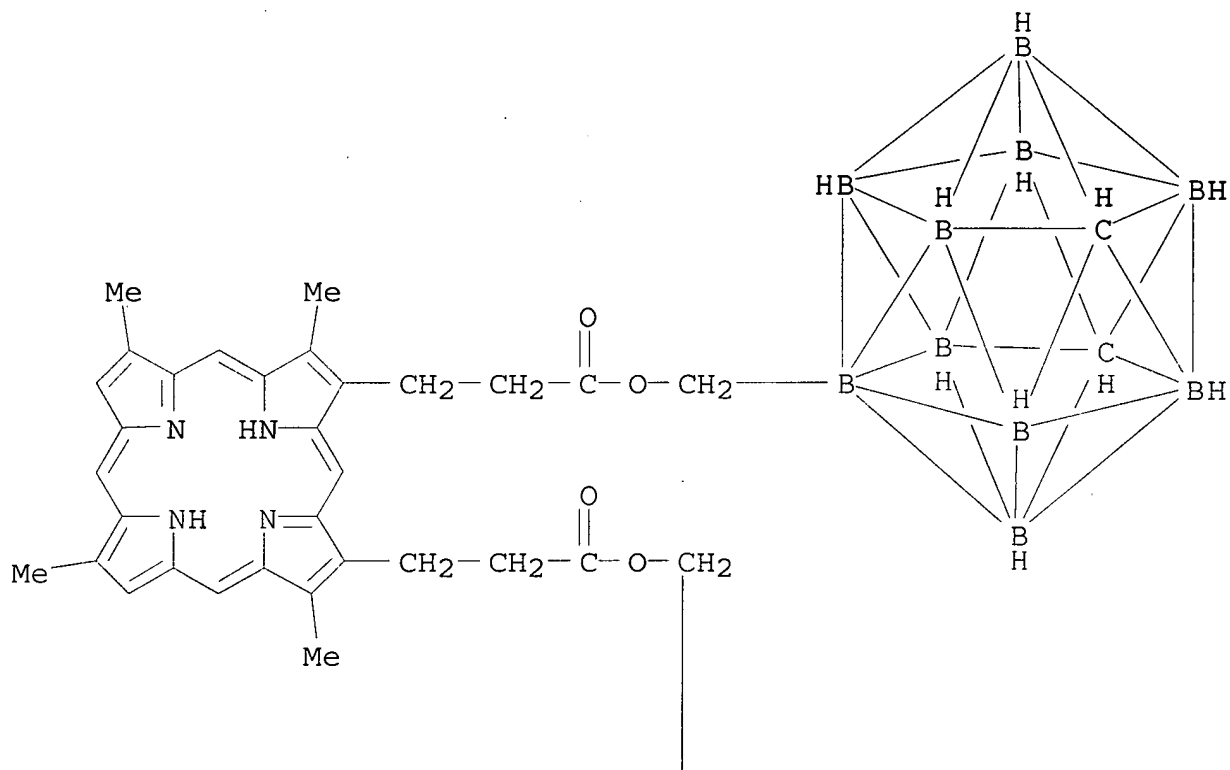


PAGE 2-A

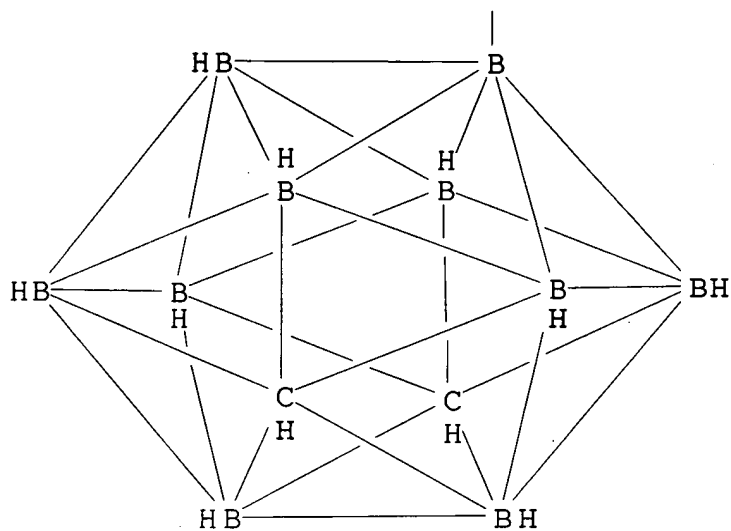


RN 264911-62-8 HCA
CN 21H,23H-Porphine-2,18-dipropionic acid, 3,7,12,17-tetramethyl-,
bis(1,7-dicarbadoecaboran(12)-9-ylmethyl) ester (9CI) (CA INDEX
NAME)

PAGE 1-A

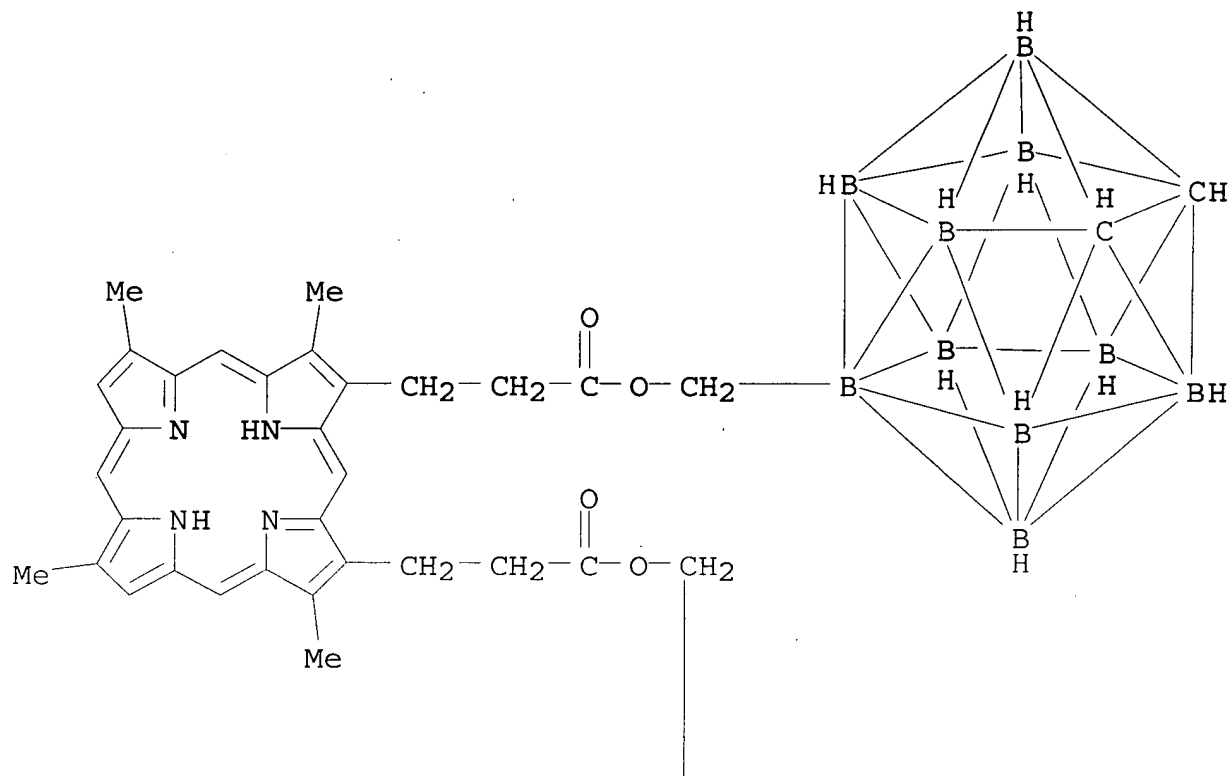


PAGE 2-A

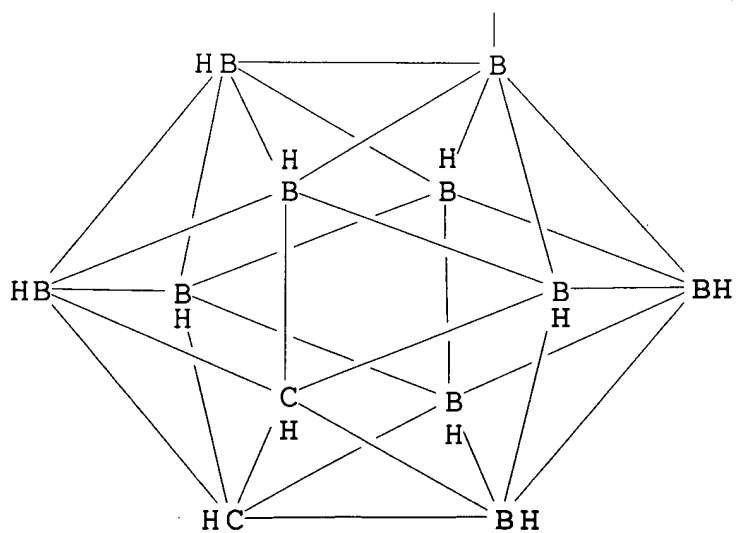


RN 685128-29-4 HCA
CN 21H,23H-Porphine-2,18-dipropanoic acid, 3,7,12,17-tetramethyl-,
bis(1,2-dicarbadoecaboran(12)-9-ylmethyl) ester (9CI) (CA INDEX
NAME)

PAGE 1-A

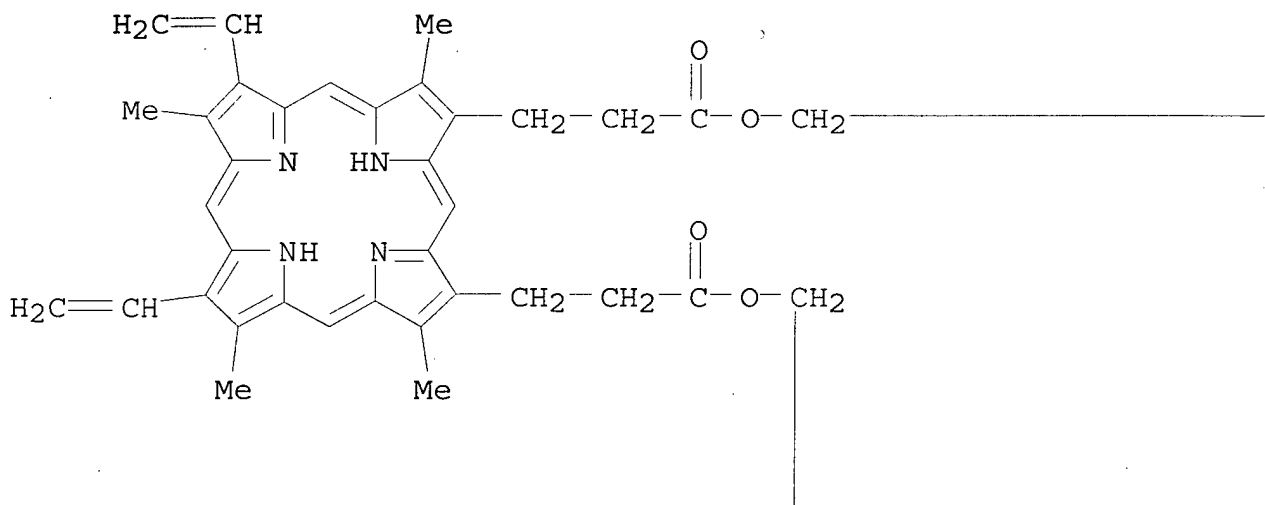


PAGE 2-A

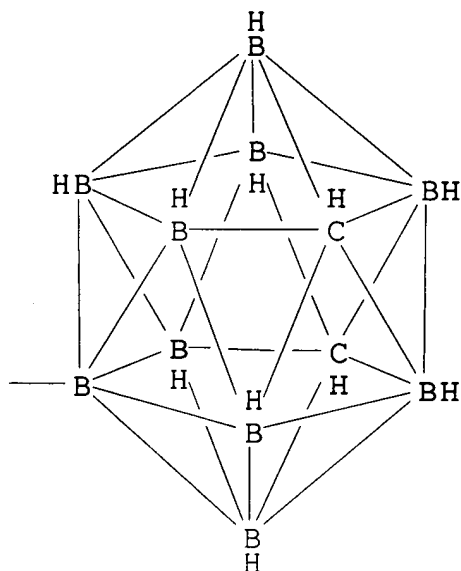


RN 870483-72-0 HCA
CN 21H,23H-Porphine-2,18-dipropanoic acid, 7,12-diethenyl-3,8,13,17-tetramethyl-, bis(1,7-dicarbadodecaboran(12)-9-ylmethyl) ester (9CI)
(CA INDEX NAME)

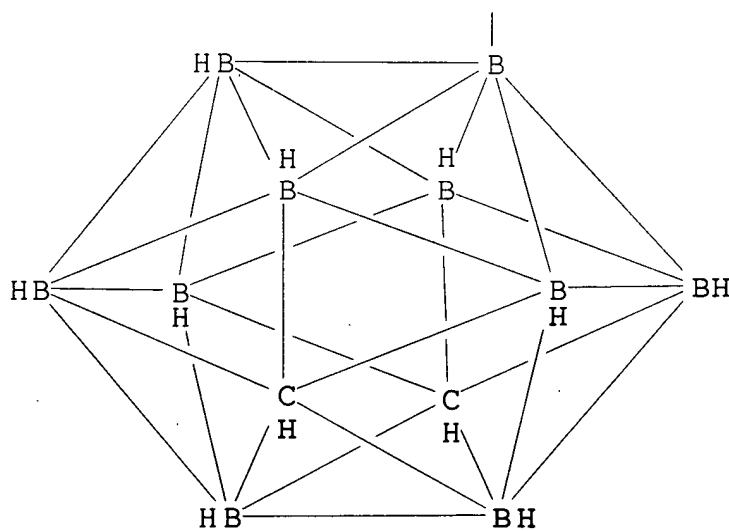
PAGE 1-A



PAGE 1-B

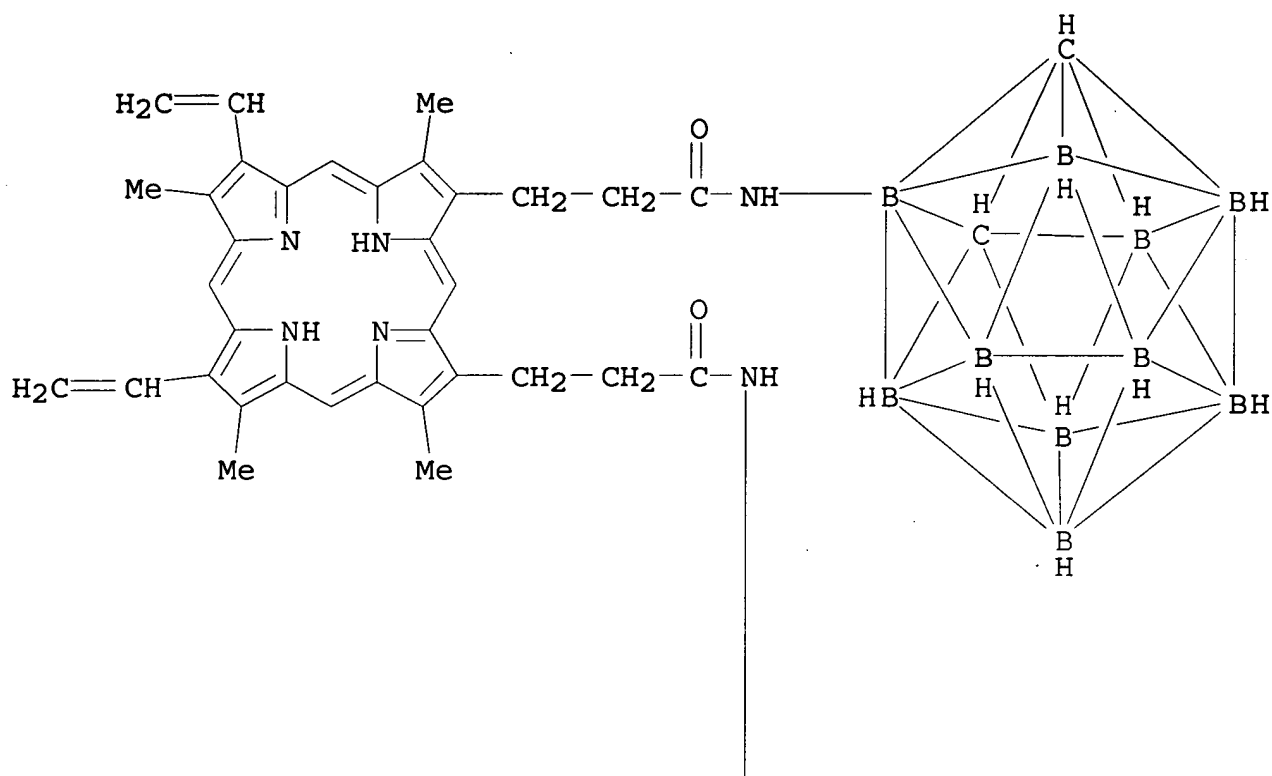


PAGE 2-A

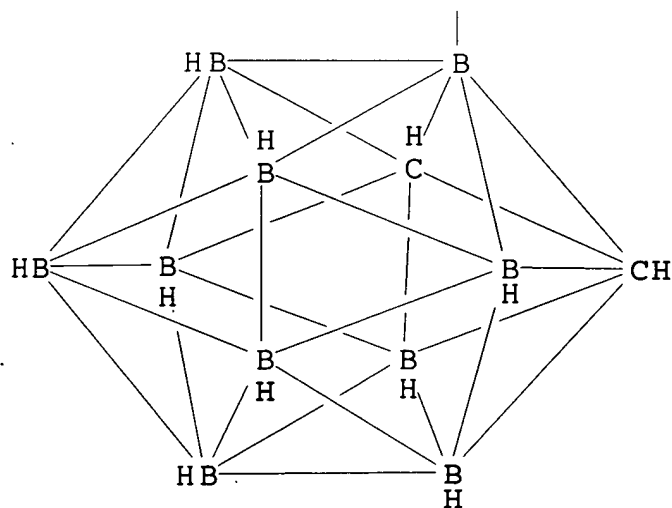


RN 870483-73-1 HCA
 CN 21H,23H-Porphine-2,18-dipropanamide, N,N'-bis(1,2-dicarbadodecaboran(12)-3-yl)-7,12-diethenyl-3,8,13,17-tetramethyl-(9CI) (CA INDEX NAME)

PAGE 1-A



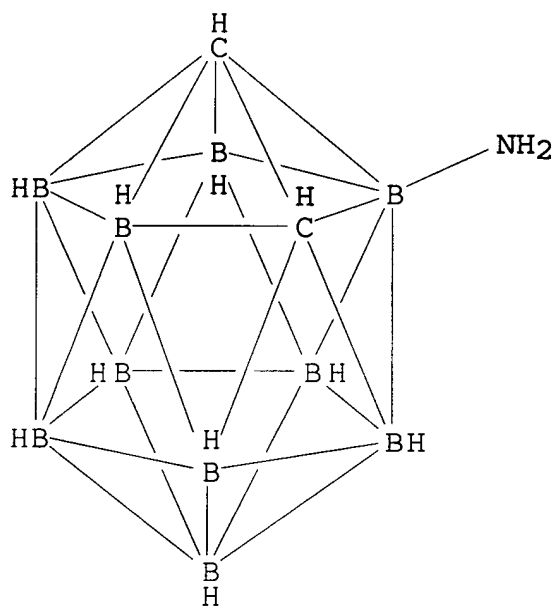
PAGE 2-A



, 1,7-Dicarbadoodecaborane(12)-9-methanol 61653-96-1,
1,2-Dicarbadoodecaborane(12)-9-methanol
(generation of singlet oxygen into gas phase during
photoexcitation of sputtered layers of
carboranylporphyrins)

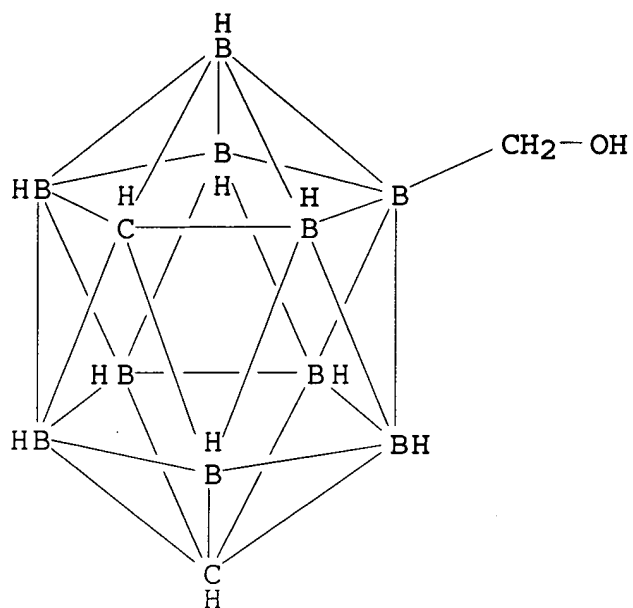
RN 22043-65-8 HCA

CN 1,2-Dicarbadoodecaboran(12)-3-amine (9CI) (CA INDEX NAME)



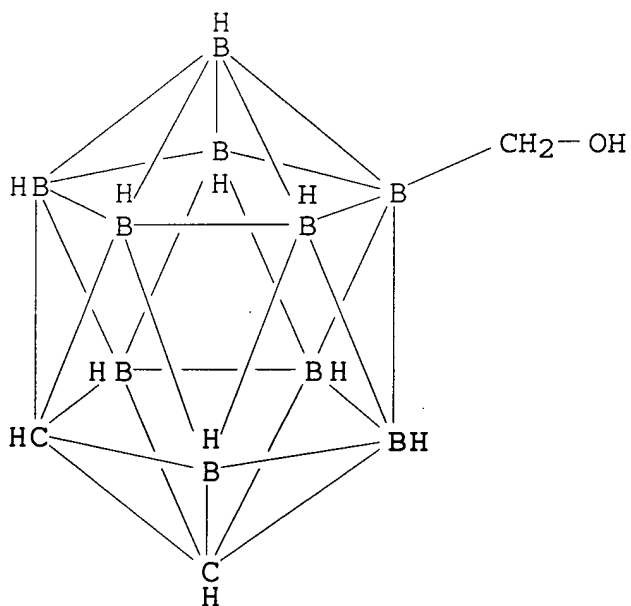
RN 61653-95-0 HCA

CN 1,7-Dicarbadoodecaborane(12)-9-methanol (9CI) (CA INDEX NAME)



RN 61653-96-1 HCA

CN 1,2-Dicarbadoecaborane(12)-9-methanol (9CI) (CA INDEX NAME)



CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST singlet oxygen photoexcitation sputtered carboranyporphyrin

IT Photoexcitation

(generation of singlet oxygen into gas phase during photoexcitation of sputtered layers of **carboranylporphyrins**)

IT 264911-57-1P 264911-62-8P 685128-29-4P
870483-72-0P 870483-73-1P

(generation of singlet oxygen into gas phase during photoexcitation of sputtered layers of **carboranylporphyrins**)

IT 448-65-7 553-12-8 22043-65-8, 3-Amino-o-carborane 61653-95-0, 1,7-Dicarbadoecaborane(12)-9-methanol 61653-96-1, 1,2-Dicarbadoecaborane(12)-9-methanol

(generation of singlet oxygen into gas phase during photoexcitation of sputtered layers of **carboranylporphyrins**)

IT 7782-44-7, Oxygen, formation (nonpreparative)
(singlet; generation of singlet oxygen into gas phase during photoexcitation of sputtered layers of **carboranylporphyrins**)

L28 ANSWER 2 OF 34 HCA COPYRIGHT 2006 ACS on STN

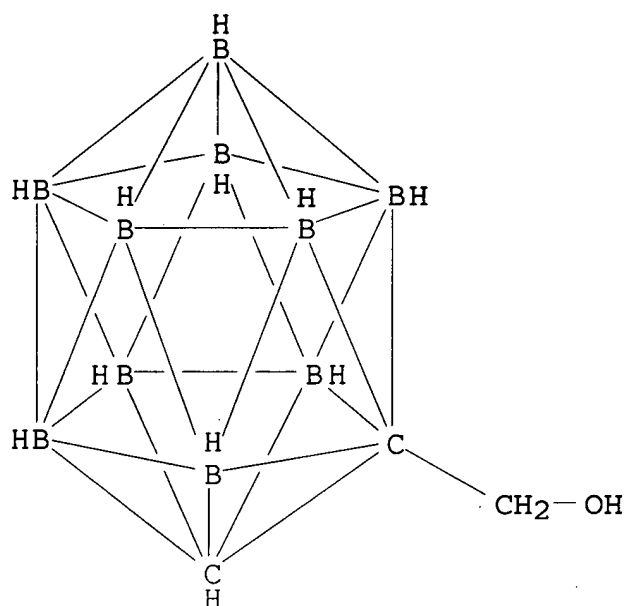
142:438545 Novel **resists** with non-traditional compositions for EUV lithography. Dai, Junyan; Ober, Christopher K. (Materials Science and Engineering, Cornell University, Ithaca, NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 5376(Pt. 1, Advances in Resist Technology and Processing XXI), 508-516 (English) 2004. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB EUV lithog. is to date the most promising NGL technol. for the sub-50 nm technol. node. In this work, we have designed and synthesized several types of organcelement **resists** with low oxygen content for high transparency. Boron was incorporated in the **resist** structures to improve both etch resistance and transparency. Both neg.-tone and pos.-tone **resists** were made contg. the **carborane** group. In a preliminary study, these polymers were imaged using a 248 nm stepper to produce images with good resoln. The incorporation of a **carborane** structure provides these polymers with excellent oxygen etch resistance. Hall effect measurements were performed and no contamination was found in the substrate after applying boron-contg. polymers.

IT 19610-34-5, 1,2-Dicarbadoecaborane(12)-1-methanol
(prepn. of **resists** with **carborane**-modified polymer for EUV lithog.)

RN 19610-34-5 HCA

CN 1,2-Dicarbadoecaborane(12)-1-methanol (7CI, 8CI, 9CI) (CA INDEX NAME)

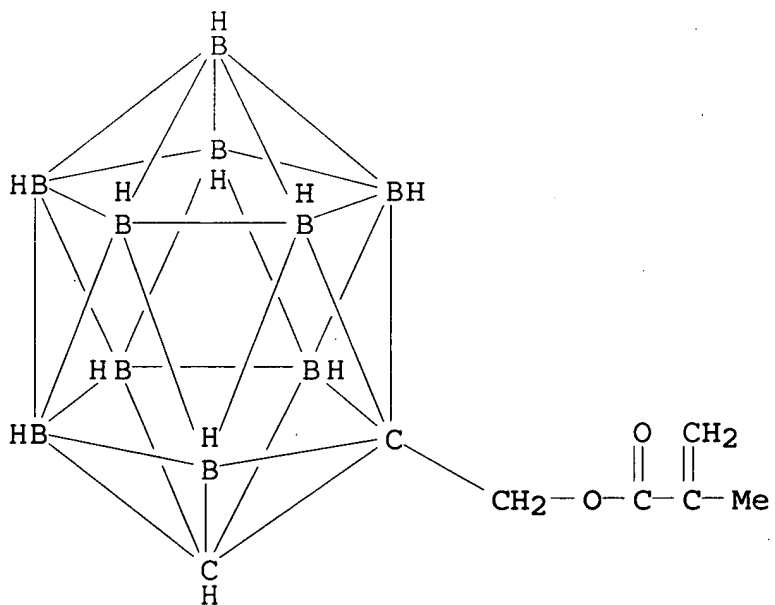


IT 19610-35-6P

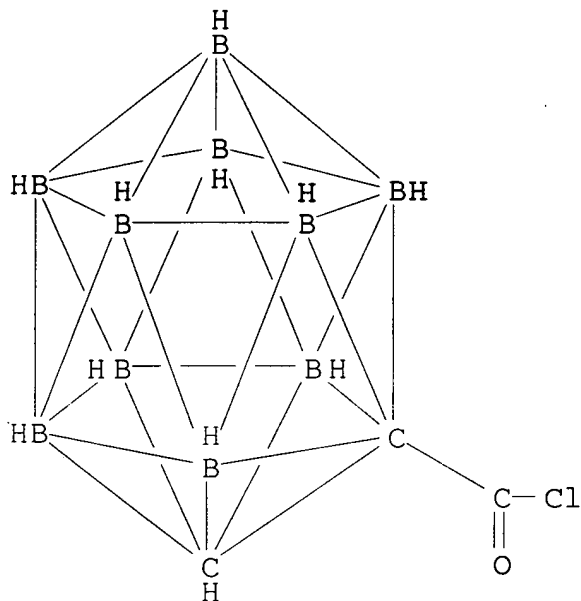
(prepn. of **resists** with **carborane-modified**
polymer for EUV lithog.)

RN 19610-35-6 HCA

CN 2-Propenoic acid, 2-methyl-, 1,2-dicarbadodecaboran(12)-1-ylmethyl
ester (9CI) (CA INDEX NAME)



IT 12076-99-2DP, reaction products with polymers
 (resists with carborane-modified polymer for
 EUV lithog.)
 RN 12076-99-2 HCA
 CN 1,2-Dicarbadoecaborane(12)-1-carbonyl chloride (7CI, 8CI, 9CI) (CA
 INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 ST photoresist EUV lithog carborane
 polymer modification
 IT Photolithography
 (UV; resists with carborane-modified polymer
 for EUV lithog.)
 IT Etching
 (plasma; resists with carborane-modified
 polymer for EUV lithog.)
 IT Hall effect
 Photoresists
 Transparency
 (resists with carborane-modified polymer for
 EUV lithog.)
 IT 920-46-7, Methacryloyl chloride 2628-17-3, 4-Hydroxystyrene
 19610-34-5, 1,2-Dicarbadoecaborane(12)-1-methanol
 (prepn. of resists with carborane-modified
 polymer for EUV lithog.)
 IT 19610-35-6P 58555-66-1P
 (prepn. of resists with carborane-modified

polymer for EUV lithog.)

IT 12076-99-2DP, reaction products with polymers
105729-79-1DP, Isoprene-styrene block copolymer, hydroxylated,
reaction products with **carborane** carboxylic acid chloride
851049-39-3DP, hydrolyzed
(**resists** with **carborane**-modified polymer for
EUV lithog.)

L28 ANSWER 3 OF 34 HCA COPYRIGHT 2006 ACS on STN

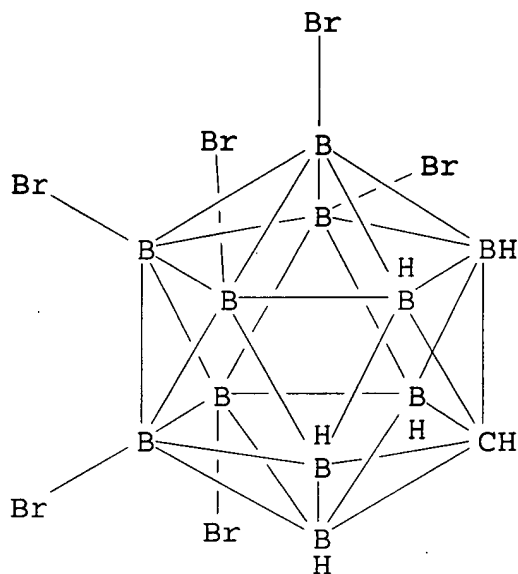
142:200506 Carbonylation catalyst and process for the **production**
of acetic **acid** from methanol. Haynes, Antony; Law, David
John; Miller, Andrew; Morris, George Ernest; Payne, Marc John;
Sunley, John Glenn (BP Chemicals Limited, UK). PCT Int. Appl. WO
2005009939 A1 20050203, 26 pp. DESIGNATED STATES: W: AE, AG, AL,
AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI,
CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE,
NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2.
APPLICATION: WO 2004-GB2686 20040623. PRIORITY: GB 2003-16756
20030717.

AB A catalyst and process for the **prodn.** of acetic
acid by the carbonylation of methanol and/or a reactive
deriv. thereof are described in which the catalyst system comprises
an iridium carbonylation catalyst, Me iodide co-catalyst, optionally
at least one of ruthenium, osmium, rhenium, zinc, gallium, tungsten,
cadmium, mercury, and indium, and at least one non-hydrohalogenoic
acid promoter. The non-hydrohalogenoic acid may be an oxoacid, a
superacid (e.g., sulfuric acid), and/or a heteropolyacid.

IT 160568-32-1
(carbonylation catalyst and process for the **prodn.** of
acetic **acid** from methanol)

RN 160568-32-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-
hexahydro-, hydrogen (9CI) (CA INDEX NAME)



● H⁺

- IC ICM C07C051-12
ICS B01J023-46; C07C053-08
- CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 67
- ST acetic acid manuf catalytic carbonylation
methanol
- IT Carboxylic acids, preparation
(acetic acid; carbonylation catalyst and process for
the prodn. of acetic acid from methanol)
- IT Carbonylation catalysts
(carbonylation catalyst and process for the prodn. of
acetic acid from methanol)
- IT Acids, uses
Heteropoly acids
Superacids
(carbonylation catalyst and process for the prodn. of
acetic acid from methanol)
- IT Acids, uses
(inorg.; carbonylation catalyst and process for the prodn
of acetic acid from methanol)
- IT Carbonylation
(process for the prodn. of acetic acid from
methanol via)
- IT 74-88-4, Iodomethane, uses 1343-93-7, 12-Tungstophosphoric acid

7439-97-6, Mercury, uses 7440-04-2, Osmium, uses 7440-15-5, Rhenium, uses 7440-18-8, Ruthenium, uses 7440-33-7, Tungsten, uses 7440-43-9, Cadmium, uses 7440-55-3, Gallium, uses 7440-66-6, Zinc, uses 7440-74-6, Indium, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 12026-57-2, 12-Molybdophosphoric acid 12027-12-2, 12-Molybdosilicic acid 12027-38-2, 12-Tungstosilicic acid 16872-11-0, Tetrafluoroboric acid 16940-81-1 82113-65-3 160568-32-1

(carbonylation catalyst and process for the prodn. of acetic acid from methanol)

IT 64-19-7P, Acetic acid, preparation

(carbonylation catalyst and process for the prodn. of acetic acid from methanol)

IT 67-56-1, Methanol, reactions 79-20-9, Methyl acetate 630-08-0, Carbon monoxide, reactions

(carbonylation catalyst and process for the prodn. of acetic acid from methanol)

L28 ANSWER 4 OF 34 HCA COPYRIGHT 2006 ACS on STN

142:93562 9-Acylation of 1-Acyldipyrromethanes Containing a Dialkylboron Mask for the .alpha.-Acylpyrrole Motif. Zaidi, Syeda Huma H.; Muthukumaran, Kannan; Tamaru, Shun-ichi; Lindsey, Jonathan S. (Department of Chemistry, North Carolina State University, Raleigh, NC, 27695-8204, USA). Journal of Organic Chemistry, 69(24), 8356-8365 (English) 2004. CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 142:93562. Publisher: American Chemical Society.

AB 1,9-Diacyldipyrromethanes are important precursors to porphyrins, yet synthetic access remains limited owing to (1) poor conversion in the 9-acylation of 1-acyldipyrromethanes and (2) handling difficulties because acyldipyrromethanes typically streak upon chromatog. and give amorphous powders upon attempted crystn. A reliable means for converting a dipyrromethane to a 1-acyldipyrromethane-dialkylboron complex was recently developed, where the dialkylboron (BR2) unit renders the complex hydrophobic and thereby facilitates isolation. Herein a refined prepn. of 1,9-diacyldipyrromethanes is presented that employs the 1-acyldipyrromethane-BR2 complex as a substrate for 9-acylation. The dialkylboron unit provides protection for the .alpha.-acylpyrrole unit. 9-Acylation requires formation of the pyrrolyl-MgBr reagent and the presence of 1 equiv of a nonnucleophilic base to quench the proton liberated upon .alpha.-acylation. Reaction of the 1-acyldipyrromethane-BR2 complex (1 equiv) with mesitylmagnesium bromide (2 equiv) followed by the addn. of an acylating agent (S-2-pyridyl thioate or acid chloride, 1.1 equiv) gives the corresponding 1,9-diacyldipyrromethane-BR2 complex. The acylation method afforded 1,9-diacyldipyrromethane-BR2 complexes with limited or no chromatog. in yields of 64-92%. The

1,9-diacyldipyrromethane-BR2 complexes are stable to routine handling, are readily sol. in common org. solvents, crystallize readily, and can now be prepd. in multigram quantities through use of stoichiometric quantities of reagents.

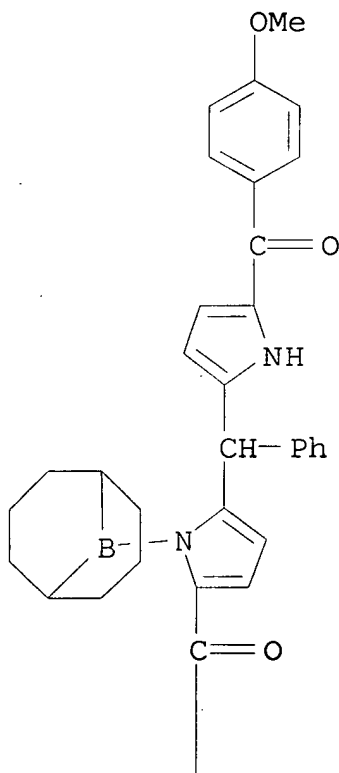
IT 816454-82-7P

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron **mask** for the prepn. of the .alpha.-acylpyrrole motif of porphyrin building blocks)

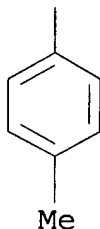
RN 816454-82-7 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[[5-(4-methoxybenzoyl)-1H-pyrrol-2-yl]phenylmethyl]-1H-pyrrol-2-yl](4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

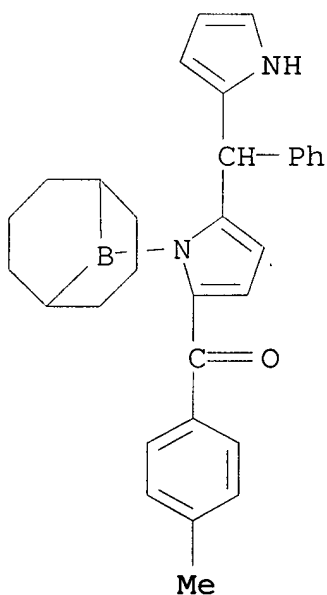


IT 816454-48-5 816454-67-8 816454-69-0
816454-72-5 816454-74-7

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
mask for the prepn. of the .alpha.-acylpyrrole motif of
porphyrin building blocks)

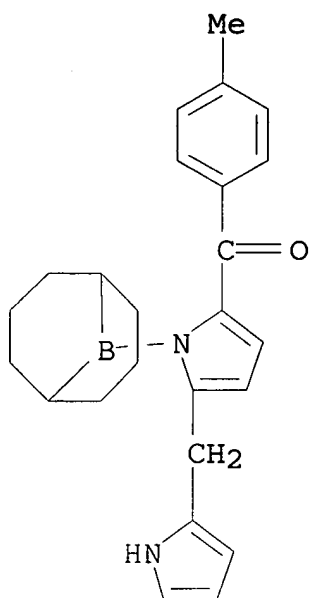
RN 816454-48-5 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-(phenyl-1H-pyrrol-2-ylmethyl)-1H-pyrrol-2-yl](4-methylphenyl)- (9CI) (CA INDEX NAME)



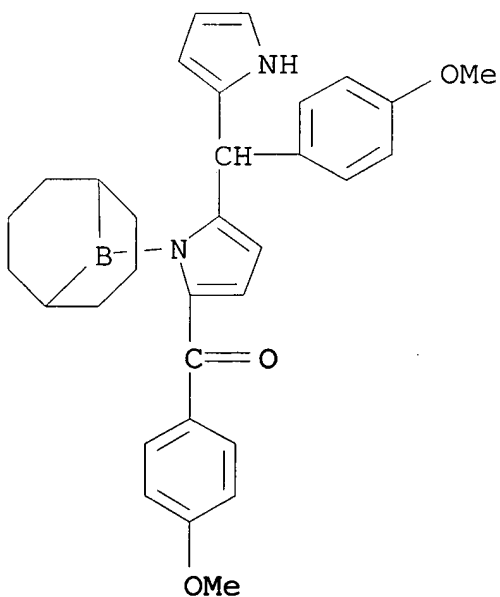
RN 816454-67-8 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-(1H-pyrrol-2-ylmethyl)-1H-pyrrol-2-yl](4-methylphenyl)- (9CI) (CA INDEX NAME)



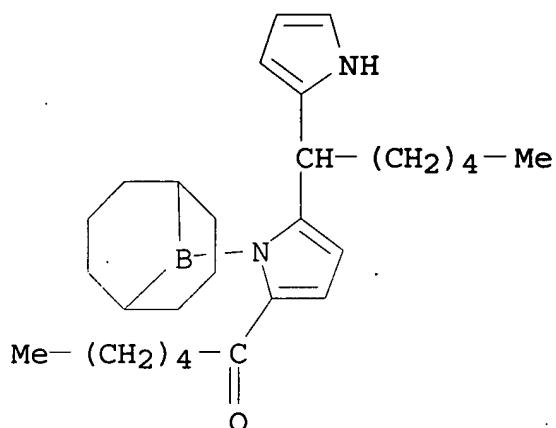
RN 816454-69-0 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[(4-methoxyphenyl)-1H-pyrrol-2-ylmethyl]-1H-pyrrol-2-yl] (4-methoxyphenyl)- (9CI) (CA INDEX NAME)



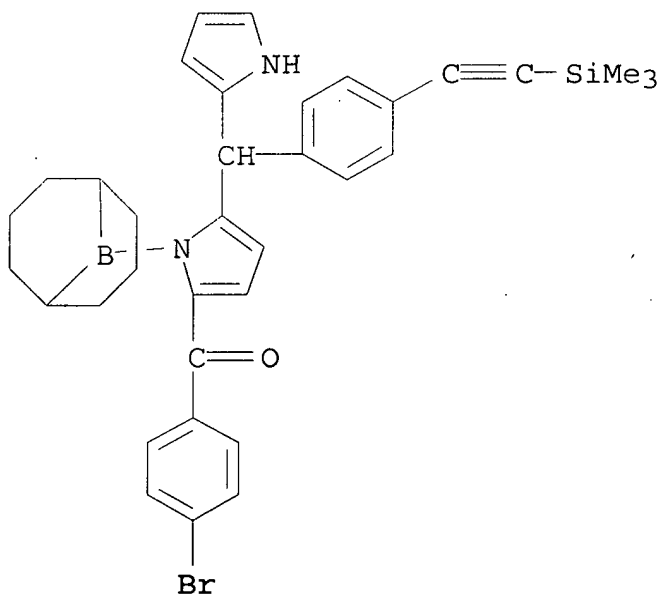
RN 816454-72-5 HCA

CN 1-Hexanone, 1-[1-(9-borabicyclo[3.3.1]non-9-yl)-5-[1-(1H-pyrrol-2-yl)hexyl]-1H-pyrrol-2-yl]- (9CI) (CA INDEX NAME)



RN 816454-74-7 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[1H-pyrrol-2-yl][4-[(trimethylsilyl)ethynyl]phenyl]methyl]-1H-pyrrol-2-yl](4-bromophenyl)-(9CI) (CA INDEX NAME)



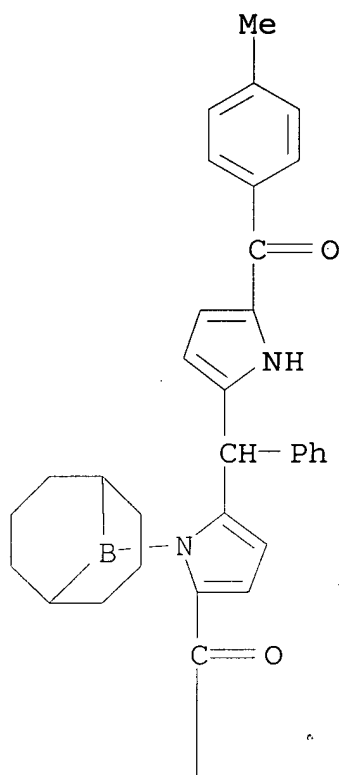
IT 816454-52-1P

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron mask for the prepn. of the .alpha.-acylpyrrole motif of porphyrin building blocks)

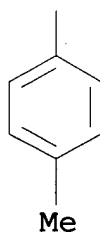
RN 816454-52-1 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[[5-(4-methylbenzoyl)-1H-pyrrol-2-yl]phenylmethyl]-1H-pyrrol-2-yl](4-methylphenyl)-(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

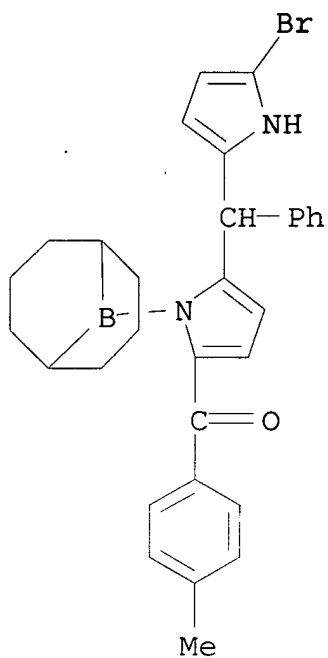


IT 816454-57-6P 816454-85-0P 816454-88-3P
 816454-91-8P 816454-94-1P 816454-97-4P
 816454-99-6P

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
 mask for the prepn. of the .alpha.-acetylpyrrole motif of
 porphyrin building blocks)

RN 816454-57-6 HCA

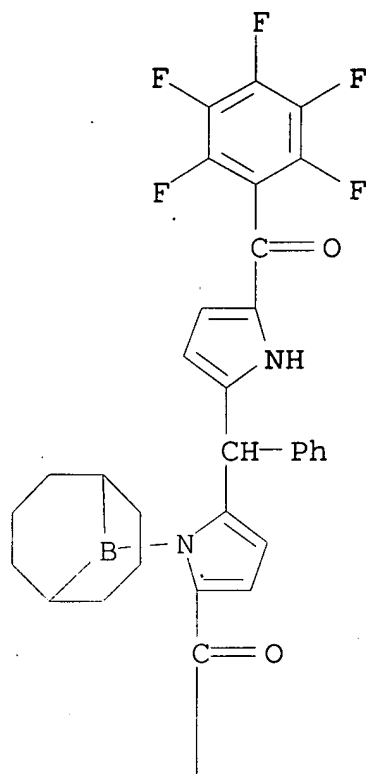
CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[(5-bromo-1H-pyrrol-2-yl)phenylmethyl]-1H-pyrrol-2-yl](4-methylphenyl)- (9CI) (CA INDEX NAME)



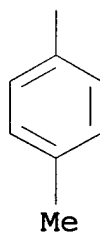
RN 816454-85-0 HCA

CN Methanone, [5-[[1-(9-borabicyclo[3.3.1]non-9-yl)-5-(4-methylbenzoyl)-1H-pyrrol-2-yl]phenylmethyl]-1H-pyrrol-2-yl](pentafluorophenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

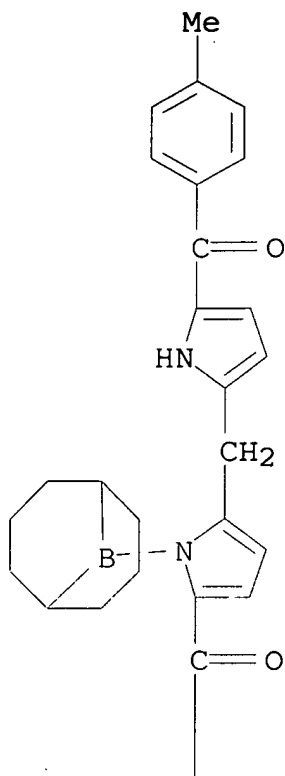


PAGE 2-A

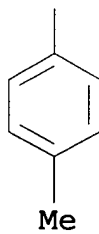


RN 816454-88-3 HCA
CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[[5-(4-methylbenzoyl)-1H-pyrrol-2-yl]methyl]-1H-pyrrol-2-yl](4-methylphenyl)-(9CI) (CA INDEX NAME)

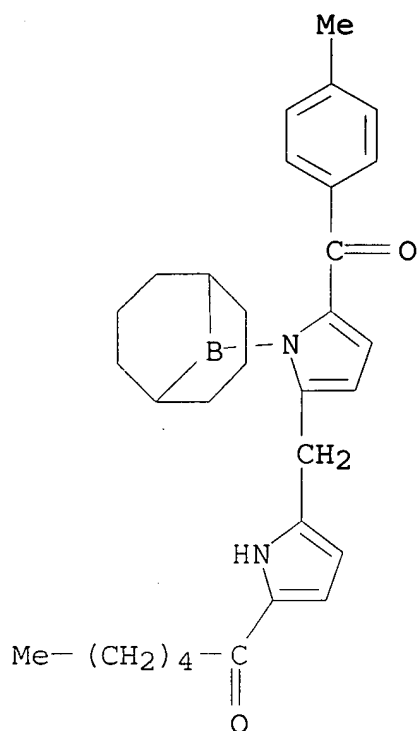
PAGE 1-A



PAGE 2-A



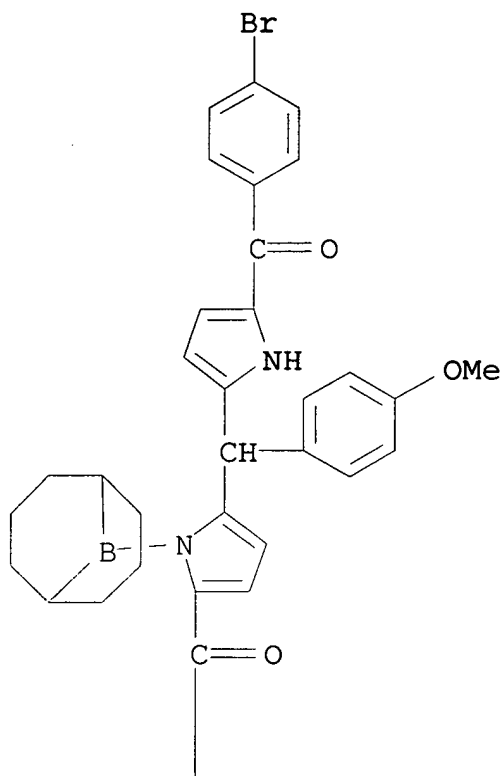
RN 816454-91-8 HCA
CN 1-Hexanone, 1-[5-[[1-(9-borabicyclo[3.3.1]non-9-yl)-5-(4-methylbenzoyl)-1H-pyrrol-2-yl]methyl]-1H-pyrrol-2-yl]- (9CI) (CA INDEX NAME)



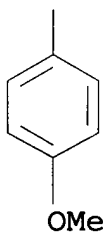
RN 816454-94-1 HCA

CN Methanone, [1-(9-borabicyclo[3.3.1]non-9-yl)-5-[[5-(4-bromobenzoyl)-1H-pyrrol-2-yl](4-methoxyphenyl)methyl]-1H-pyrrol-2-yl](4-methoxyphenyl)-(9CI) (CA INDEX NAME)

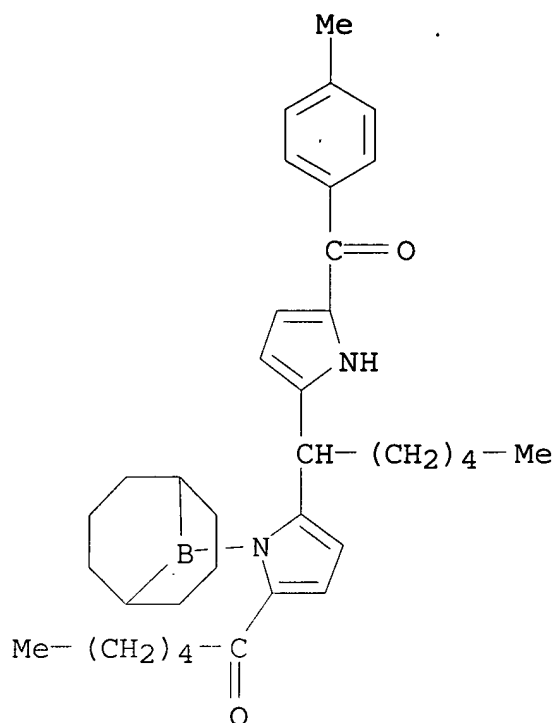
PAGE 1-A



PAGE 2-A



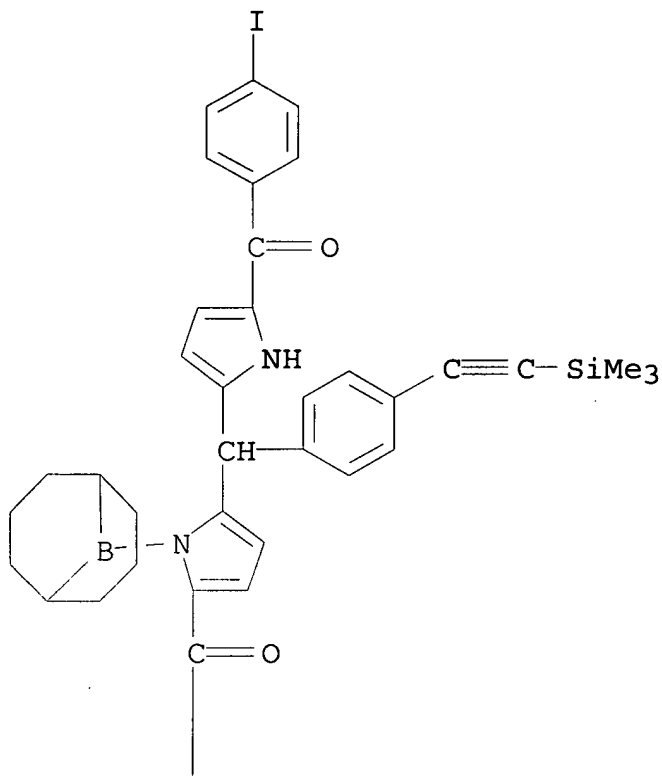
RN 816454-97-4 HCA
 CN 1-Hexanone, 1-[1-(9-borabicyclo[3.3.1]non-9-yl)-5-[1-[5-(4-methylbenzoyl)-1H-pyrrol-2-yl]hexyl]-1H-pyrrol-2-yl]-(9CI) (CA INDEX NAME)



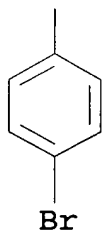
RN 816454-99-6 HCA

CN Methanone, [5-[[1-(9-borabicyclo[3.3.1]non-9-yl)-5-(4-bromobenzoyl)-1H-pyrrol-2-yl][4-[(trimethylsilyl)ethynyl]phenyl]methyl]-1H-pyrrol-2-yl](4-iodophenyl)-(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 26-7 (Biomolecules and Their Synthetic Analogs)

Section cross-reference(s): 75

IT Acylation

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
mask for the prepn. of the .alpha.-acylpyrrole motif of
 porphyrin building blocks)

IT 816454-82-7P

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron

mask for the prepn. of the .alpha.-acylpyrrole motif of porphyrin building blocks)

IT 100-07-2, p-Anisoyl chloride 586-75-4, 4-Bromobenzoyl chloride
874-60-2, p-Toluoyl chloride 1711-02-0, 4-Iodobenzoyl chloride
2251-50-5, Pentafluorobenzoyl chloride 2637-34-5,
2-Mercaptopyridine 19337-35-0 74032-48-7 107798-98-1
171523-03-8 262267-31-2 262267-33-4 307930-87-6 750646-90-3
816454-48-5 816454-67-8 816454-69-0
816454-72-5 816454-74-7 816454-77-0
816454-79-2

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
mask for the prepn. of the .alpha.-acylpyrrole motif of
porphyrin building blocks)

IT 74032-45-4P **816454-52-1P**
(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
mask for the prepn. of the .alpha.-acylpyrrole motif of
porphyrin building blocks)

IT 132313-39-4P 171523-04-9P 816454-44-1P **816454-57-6P**
816454-85-0P 816454-88-3P 816454-91-8P
816454-94-1P 816454-97-4P 816454-99-6P
816455-02-4P 816455-05-7P

(9-acylation of 1-acyldipyrromethanes contg. a dialkylboron
mask for the prepn. of the .alpha.-acylpyrrole motif of
porphyrin building blocks)

L28 ANSWER 5 OF 34 HCA COPYRIGHT 2006 ACS on STN

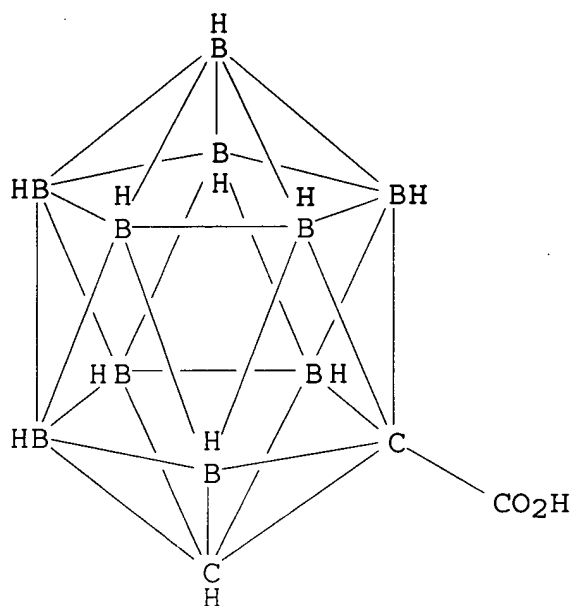
142:45894 **Resists** for EUV lithography comprising
silicon and boron-containing polymers. Dai, Junyan; Ober,
Christopher K.; Wang, Lin; Cerrina, Franco; Nealey, Paul (USA).
U.S. Pat. Appl. Publ. US 2004241574 A1 20041202, 24 pp. (English).
CODEN: USXXCO. APPLICATION: US 2004-800195 20040312. PRIORITY: US
2003-PV454062 20030312.

AB **Resist** compns. contg. silicon, boron, or both silicon and
boron may be used with ultra-violet lithog. processes and
extreme ultra-violet (EUV) lithog. processes to increase
the reactive ion etch resistance of the **resist** compns.,
improve transmission of the **resist** materials, and to dope
substrates.

IT **18178-04-6P 51999-28-1P**
(prepn. of **resists** for EUV lithog. comprising
silicon and boron-contg. polymers)

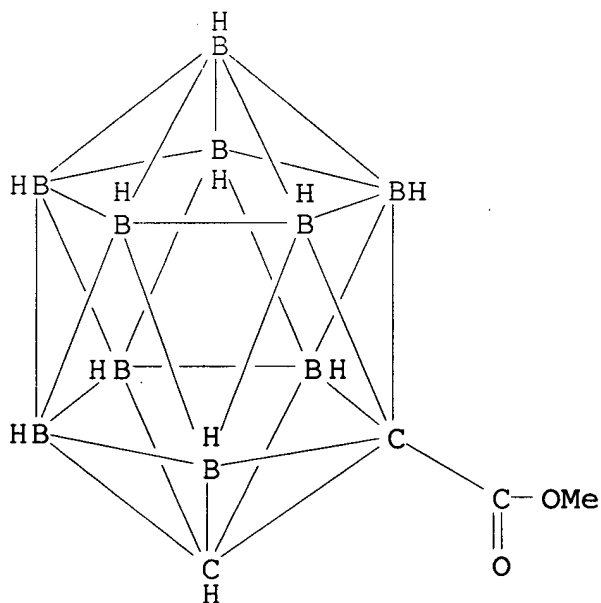
RN 18178-04-6 HCA

CN 1,2-Dicarbadodecaborane(12)-1-carboxylic acid (7CI, 8CI, 9CI) (CA
INDEX NAME)



RN 51999-28-1 HCA

CN 1,2-Dicarbadoecaborane(12)-1-carboxylic acid, methyl ester (7CI;
9CI) (CA INDEX NAME)

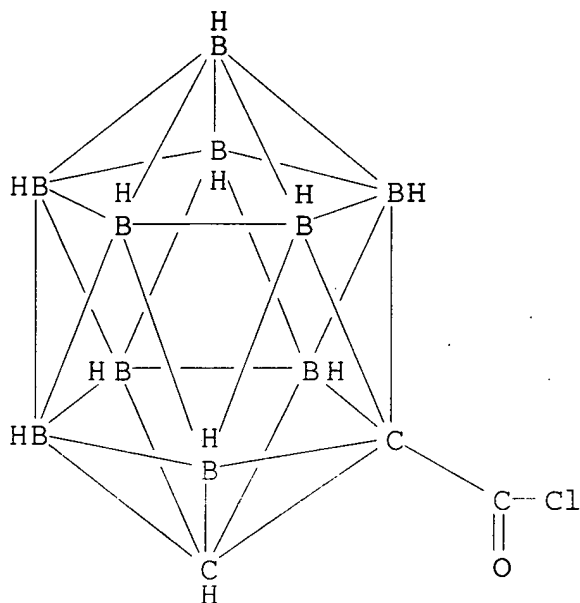


IT 12076-99-2DP, reaction products with isoprene-styrene block
copolymer
(resists for EUV lithog. comprising silicon

and boron-contg. polymers)

RN 12076-99-2 HCA

CN 1,2-Dicarbadoecaborane(12)-1-carbonyl chloride (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM G03C001-76

INCL 430270100

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

ST **resist** EUV lithog silicon boron polymer contg

IT 623-47-2, Ethyl propiolate 17702-41-9, Decaborane
(prepn. of **resists** for EUV lithog. comprising
silicon and boron-contg. polymers)

IT 18178-04-6P 51999-28-1P

(prepn. of **resists** for EUV lithog. comprising
silicon and boron-contg. polymers)

IT 97822-61-2P 105729-79-1DP, Isoprene-styrene block copolymer,
reaction products with alkylsilanes, alkylphenylsilanes and borane
derivs. 557099-43-1P, Dimethylphenylvinylsilane-isoprene block
copolymer 803688-07-5P, Isoprene-trimethylsilylstyrene block
copolymer 803688-08-6P

(**resists** for EUV lithog. comprising silicon
and boron-contg. polymers)

IT 766-77-8DP, Dimethylphenylsilane, reaction products with
isoprene-styrene copolymer 12076-99-2DP, reaction products
with isoprene-styrene block copolymer 51458-06-1DP,
Dimesitylborane, reaction products with isoprene-styrene copolymer

803688-09-7P

(**resists** for EUV lithog. comprising silicon
and boron-contg. polymers)

L28 ANSWER 6 OF 34 HCA COPYRIGHT 2006 ACS on STN

141:156806 Putting tert-butyl cation in a bottle. Kato, Tsuyoshi; Reed, Christopher A. (Department of Chemistry, University of California, Riverside, CA, 92521-0403, USA). Angewandte Chemie, International Edition, 43(22), 2908-2911 (English) 2004. CODEN: ACIEF5. ISSN: 1433-7851. OTHER SOURCES: CASREACT 141:156806. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA.

AB Usually viewed as intermediates that become long-lived at low temps. in **superacidic** media, simple alkyl carbocations such as the tert-Bu cation can be isolated as stable salts at room temp. when partnered with inert **carborane** anions. The X-ray crystal structures of tert-Bu, tert-pentyl, and methylcyclopentyl cations have been detd. with CHB11Me5X5- counterions (X = Br or Cl).

IT 727990-47-8P 727990-51-4P 727990-52-5P

(crystallog.; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

RN 727990-47-8 HCA

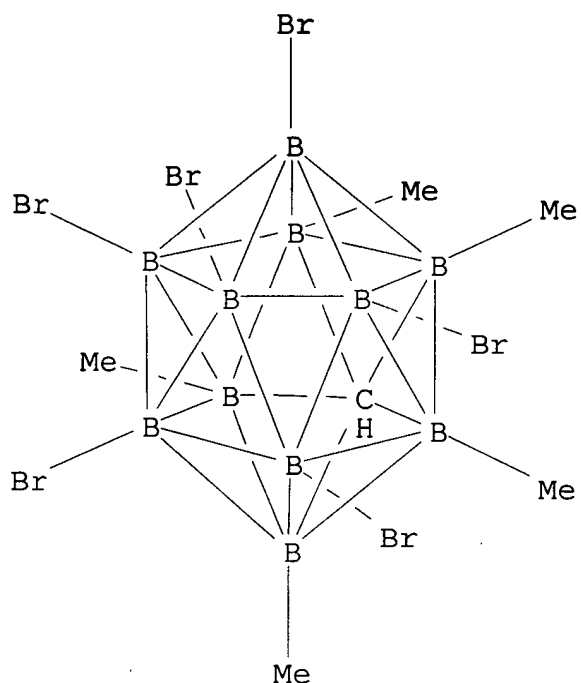
CN Cyclopentylum, 1-methyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

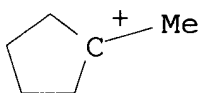
CCI RIS



CM 2

CRN 17106-22-8

CMF C6 H11



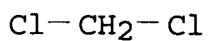
RN 727990-51-4 HCA

CN Ethylium, 1,1-dimethyl-, 7,8,9,10,11,12-hexachloro-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-), compd. with dichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 75-09-2

CMF C H2 Cl2



CM 2

CRN 727990-50-3

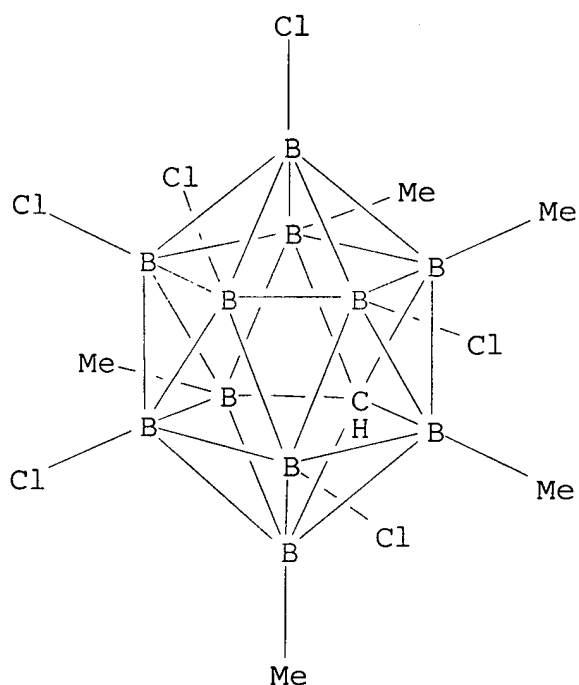
CMF C6 H16 B11 Cl6 . C4 H9

CM 3

CRN 405195-07-5

CMF C6 H16 B11 Cl6

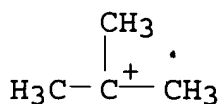
CCI RIS



CM 4

CRN 14804-25-2

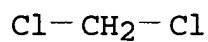
CMF C4 H9



RN 727990-52-5 HCA

CN Propylium, 1,1-dimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-), compd. with dichloromethane (1:1) (9CI) (CA INDEX NAME)

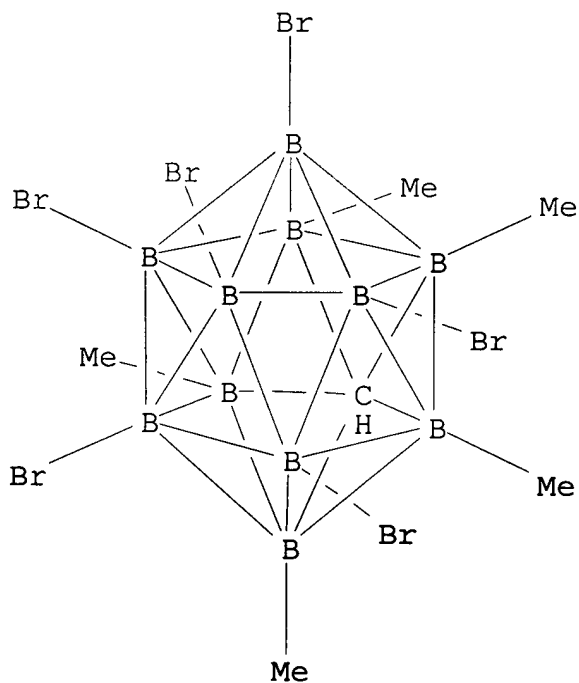
CM 1

CRN 75-09-2
CMF C H2 Cl2

CM 2

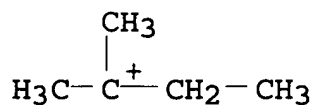
CRN 727990-42-3
CMF C6 H16 B11 Br6 . C5 H11

CM 3

CRN 405195-04-2
CMF C6 H16 B11 Br6
CCI RIS

CM 4

CRN 17603-15-5
CMF C5 H11

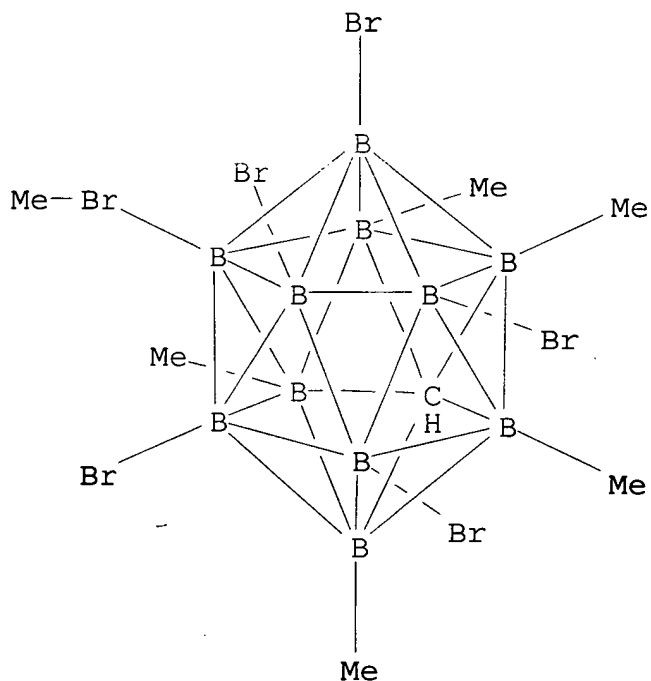


IT 405195-06-4 405195-19-9 727991-90-4

(hydride abstraction agent; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

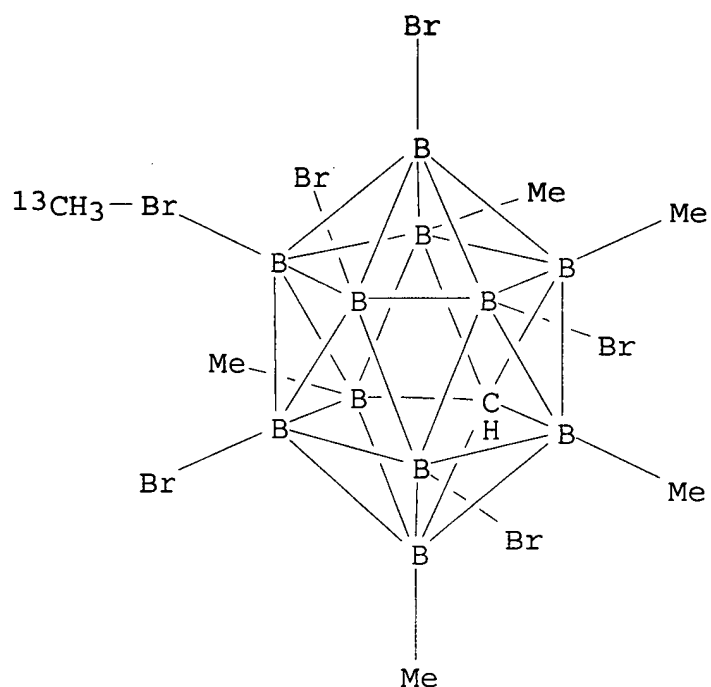
RN 405195-06-4 HCA

CN 1-Carbadodecaborane(11), 7,8,9,10,12-pentabromo-11-(bromomethane)-2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)

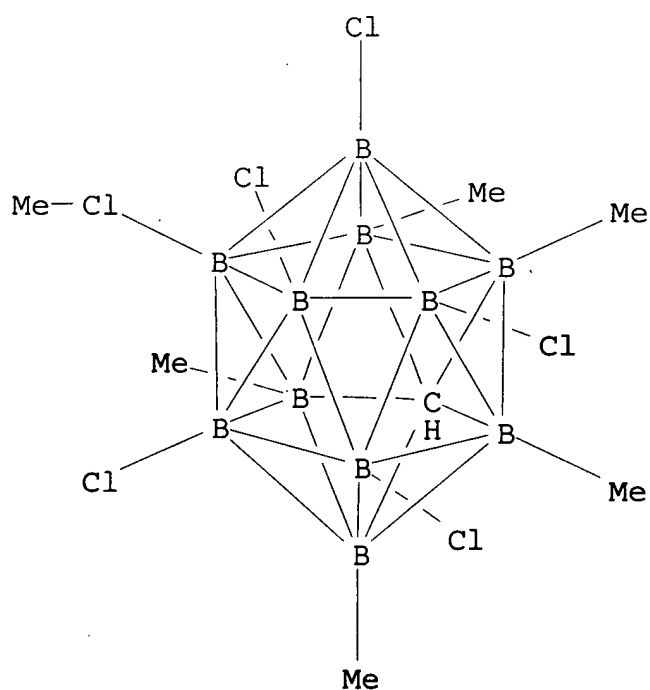


RN 405195-19-9 HCA

CN 1-Carbadodecaborane(11), 7,8,9,10,12-pentabromo-11-(bromomethane-13C)-2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)



RN 727991-90-4 HCA
CN 1-Carbadodecaborane(11), 7,8,9,10,12-pentachloro-11-(chloromethane)-
2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)



IT 727990-40-1P 727990-42-3P 727990-44-5P
727990-45-6P 727990-48-9P

(prepn. and crystallog. structure anal. of tertiary carbocation
carborane salts by hydride abstraction reaction of Me
carboranes with hydrocarbons)

RN 727990-40-1 HCA

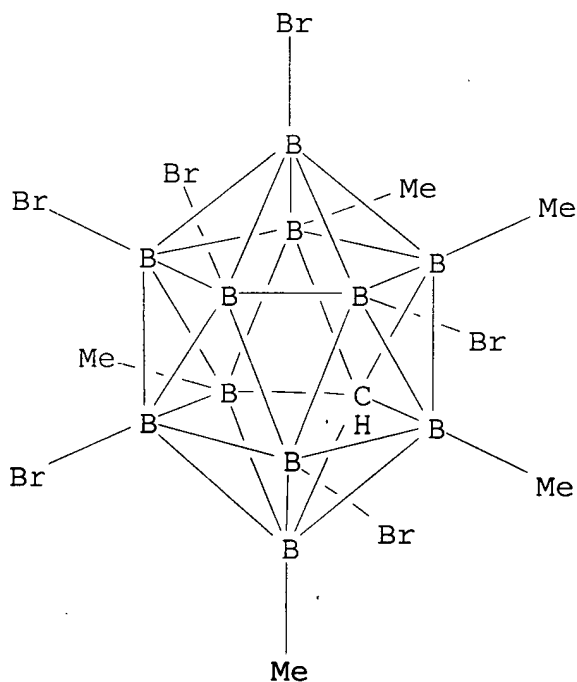
CN Ethylium, 1,1-dimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-
pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

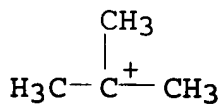
CCI RIS



CM 2

CRN 14804-25-2

CMF C4 H9



RN 727990-42-3 HCA

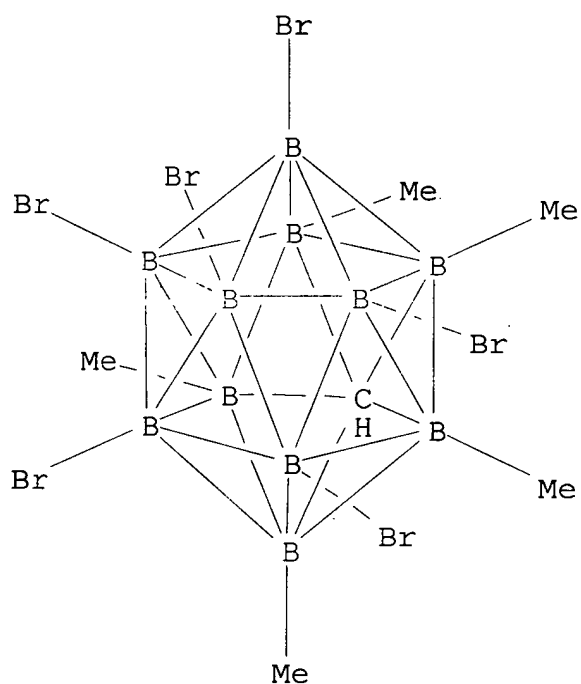
CN Propylium, 1,1-dimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

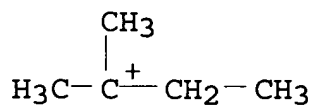
CCI RIS



CM 2

CRN 17603-15-5

CMF C5 H11



RN 727990-44-5 HCA

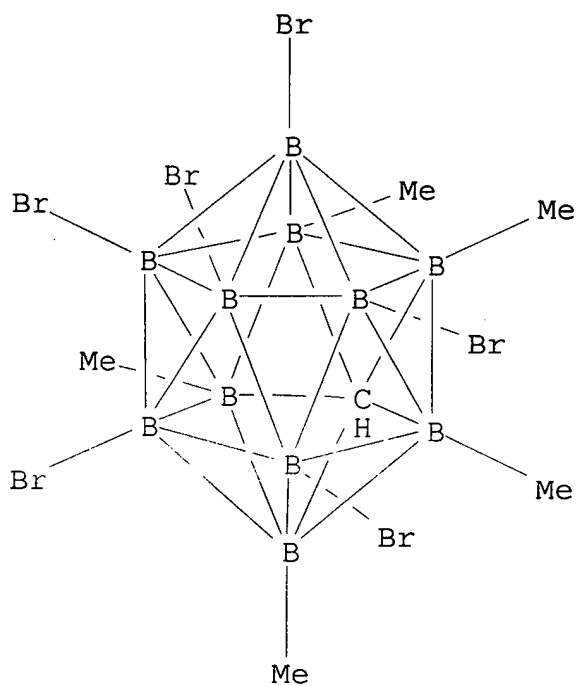
CN Propylium, 1-ethyl-1-methyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

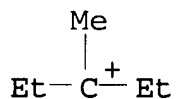
CCI RIS



CM 2

CRN 17603-16-6

CMF C6 H13



RN 727990-45-6 HCA

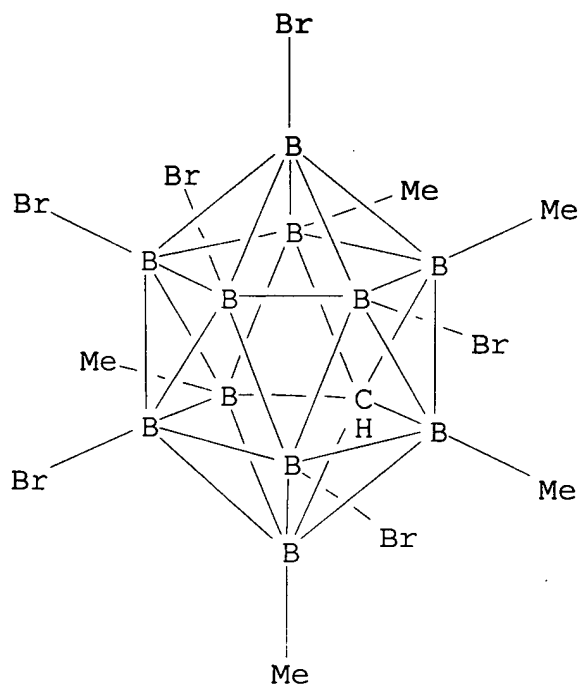
CN Propylium, 1,1,2-trimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

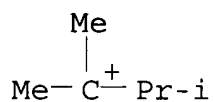
CCI RIS



CM 2

CRN 17603-18-8

CMF C6 H13



RN 727990-48-9 HCA

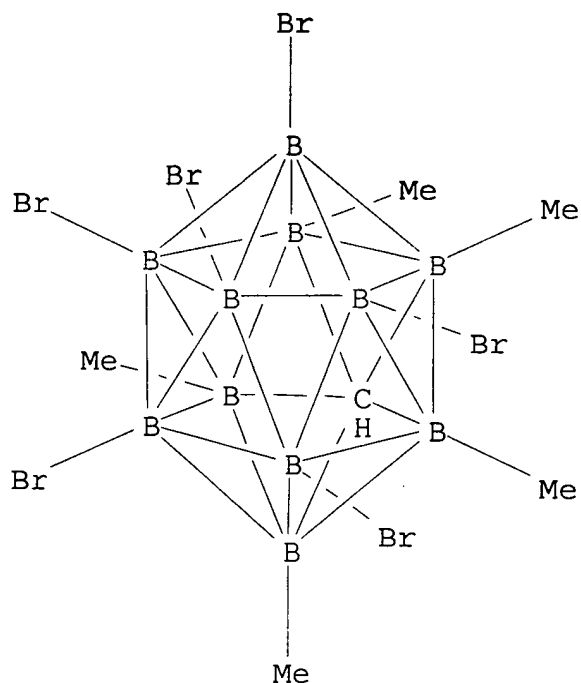
CN Butylium, 1,1-dimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

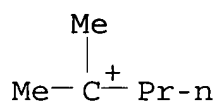
CCI RIS



CM 2

CRN 17603-17-7

CMF C6 H13



CC 22-13 (Physical Organic Chemistry)

Section cross-reference(s): 29

ST tertiary carbocation **carborane** salt crystallog

IT Hydrogen bond

(C-H...halogen, in crystal structure; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Alkanes, reactions

(branched; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Hyperconjugation

(conformation of tertiary carbocation **carborane** salts

as indicative of C-H hyperconjugation; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Conformation

(of tertiary carbocation **carborane** salts as indicative of C-H hyperconjugation; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Crystal structure

Molecular structure

(of tertiary carbocation **carborane** salts; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Abstraction reaction

Counterions

Hydride transfer

(prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Alkanes, reactions

Cycloalkanes

(prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Acidity

(**superacidity**, of tertiary carbocations; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT Carbocations

(tertiary; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT 727990-47-8P 727990-51-4P 727990-52-5P

(crystallog.; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT 405195-06-4 405195-19-9 727991-90-4

(hydride abstraction agent; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

IT 106-97-8, Butane, reactions 109-66-0, Pentane, reactions

110-54-3, Hexane, reactions 110-82-7, Cyclohexane, reactions
(hydride abstraction/rearrangement; prepn. and crystallog.

structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

- IT 75-28-5, Isobutane 78-78-4, Isopentane 96-37-7, Methylcyclopentane
(hydride abstraction; prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)
- IT 74-82-8P, Methane, preparation 6532-48-5P, Methane-13C
(prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)
- IT 727990-40-1P 727990-42-3P 727990-44-5P 727990-45-6P 727990-48-9P
(prepn. and crystallog. structure anal. of tertiary carbocation **carborane** salts by hydride abstraction reaction of Me **carboranes** with hydrocarbons)

L28 ANSWER 7 OF 34 HCA COPYRIGHT 2006 ACS on STN

140:207331 Synthesis and evaluation of novel organo-element **resists** for EUV lithography. Dai, Junyan; Ober, Christopher K.; Kim, Sang-Ouk; Nealey, Paul F.; Golovkina, Victoria; Shin, Jangho; Wang, Lin; Cerrina, Franco (Materials Science and Engineering, Cornell Univ., Ithaca, NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 5039(Pt. 2, Advances in Resist Technology and Processing XX), 1164-1172 (English) 2003. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

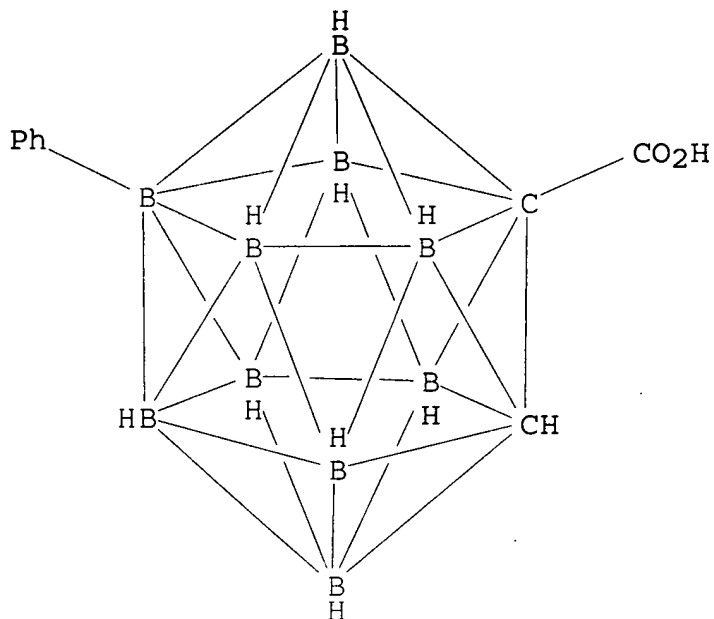
- AB Extreme-UV (EUV) **lithog.** is to date the most promising NGL technol. for the sub-50 nm technol. node. The authors designed and synthesized several types of organoelement **resists** with min. oxygen content for high transparency. Either silicon or boron was incorporated in the **resist** structures to improve both etch resistance and transparency. In the exposure studies, it was possible to image the silicon-contg. polymers to 22.5 nm line/space patterns using EUV interferometry. A second type of EUV transparent **resist** platform was studied involving boron-contg. polymers. **Carborane** carboxylic acid was attached to a copolymer backbone to introduce boron atoms with controlled structure attachment level. In a preliminary study, these polymers could be imaged by 248 nm exposure. Effect of structure on line edge roughness is also to be included in the discussion.

- IT 662152-19-4 662152-20-7 662152-21-8
(prepn. of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog.**)

RN 662152-19-4 HCA

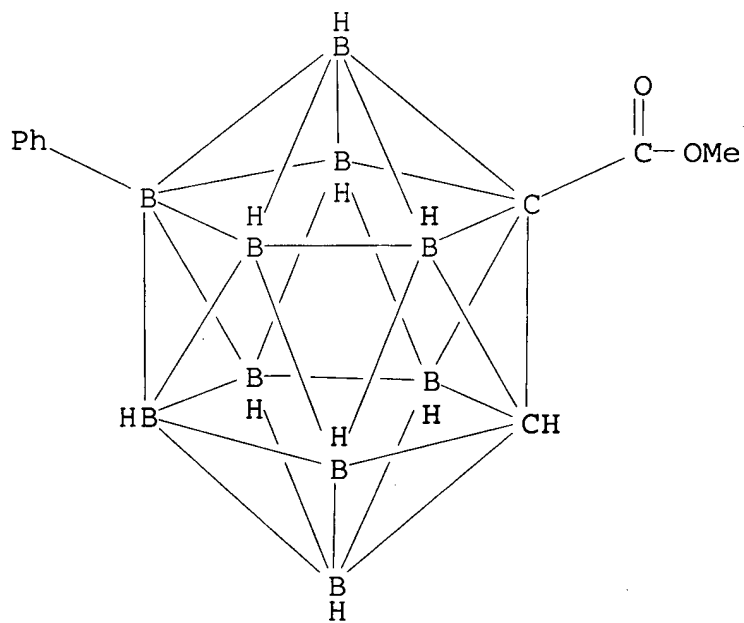
CN 1,2-Dicarbadodecaborane(12)-1-carboxylic acid, 9-phenyl- (9CI) (CA

INDEX NAME)



RN 662152-20-7 HCA

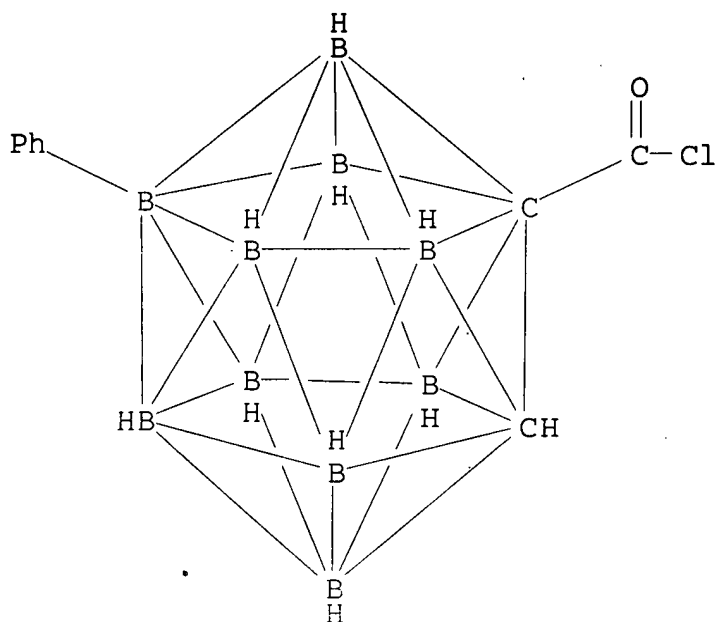
CN 1,2-Dicarbadodecaborane(12)-1-carboxylic acid, 9-phenyl-, methyl ester (9CI) (CA INDEX NAME)



RN 662152-21-8 HCA

CN 1,2-Dicarbadodecaborane(12)-1-carbonyl chloride, 9-phenyl- (9CI)

(CA INDEX NAME)

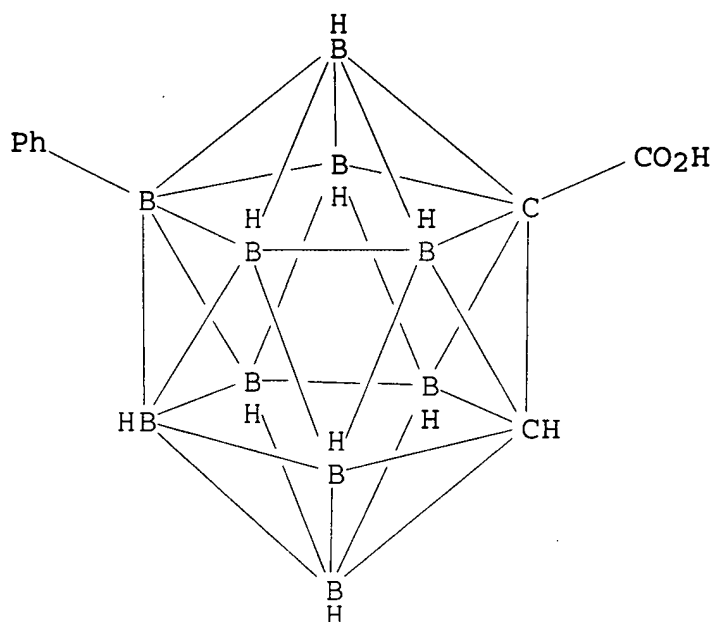


IT 662152-19-4D, reaction product with isoprene-styrene block copolymer

(properties of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)

RN 662152-19-4 HCA

CN 1,2-Dicarbado-dodecaborane(12)-1-carboxylic acid, 9-phenyl- (9CI) (CA INDEX NAME)



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST silicon boron contg polymer **photoresist** extreme UV **lithog**
- IT Polymers, properties
(block; properties of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)
- IT Sputtering
(etching, reactive, resistance; properties of Si- and B-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)
- IT Negative **photoresists**
(extreme-UV, chem. amplified; prepn. of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)
- IT Positive **photoresists**
(extreme-UV, chem. amplified; properties of silicon-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)
- IT Sulfonium compounds
(**photoacid** generator; properties of Si- and B-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)
- IT Hydroboration
(prepn. of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV **lithog**.)

- IT Surface roughness
(properties of Si- and B-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT Etching
(sputter, reactive, resistance; properties of Si- and B-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT 662152-19-4 662152-20-7 662152-21-8
(prepn. of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT 662152-18-3D, hydrolyzed
(prepn. of silicon-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT 114442-01-2, 4-Pentamethyldisilylstyrene
(prepn. of silicon-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT 105729-79-1D, Isoprene-styrene block copolymer, hydroxylated esters with 1-carboxycarborane 105729-79-1D, Isoprene-styrene block copolymer, hydroxylated, hydroboration products 662152-19-4D, reaction product with isoprene-styrene block copolymer
(properties of boron-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)
- IT 662152-17-2D, Poly(4-trimethylsilylstyrene-4-acetoxystyrene), hydrolyzed
(properties of silicon-contg. polymer **photoresists** with high sensitivity and etch resistance for extreme-UV lithog.)

L28 ANSWER 8 OF 34 HCA COPYRIGHT 2006 ACS on STN

140:94083 On Attempts at Generation of **Carboranyl** Carbocation. Tsuji, Motonori (Graduate School of Pharmaceutical Sciences, University of Tokyo, Bunkyo, Tokyo, 113-0033, Japan). Journal of Organic Chemistry, 68(25), 9589-9597 (English) 2003. CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 140:94083. Publisher: American Chemical Society.

AB All three possible isomers of C-hydroxycarborane were prepd. from the corresponding amines via diazotization. The O-protonated C-hydroxycarboranes were characterized using the NMR spectrum measurements. Attempts at generating of **carboranyl** carbocations were carried out by the solvolyses of C-tosylates and C-triflates, as well as by treatment with **superacids**. Anchimeric assistance of both homoconjugative and hyperconjugative substituents was also investigated, as

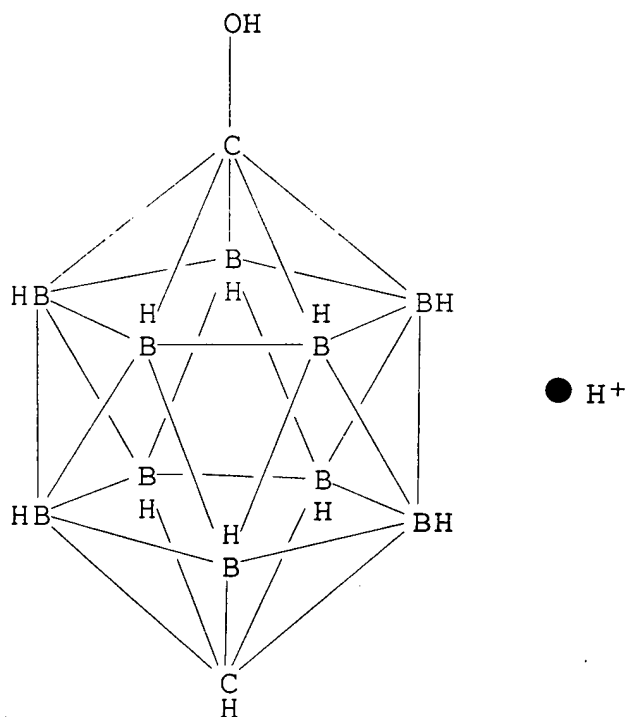
demonstrated by a successful strategy devised for the solvolytic generation of a Ph cation. However, no chem. evidence of **carboranyl** carbocation formation was shown, although the **carboranyl** carbocation may be an intermediate in the decompn. of the C-**carboranediazonium** ion.

IT 643020-96-6

(attempts at generation of **carboranyl** carbocation via solvolysis reaction of tosylates and triflates and kinetics of solvolysis)

RN 643020-96-6 HCA

CN 1,12-Dicarbadoecaboran(12)-1-ol, conjugate monoacid (9CI) (CA INDEX NAME)

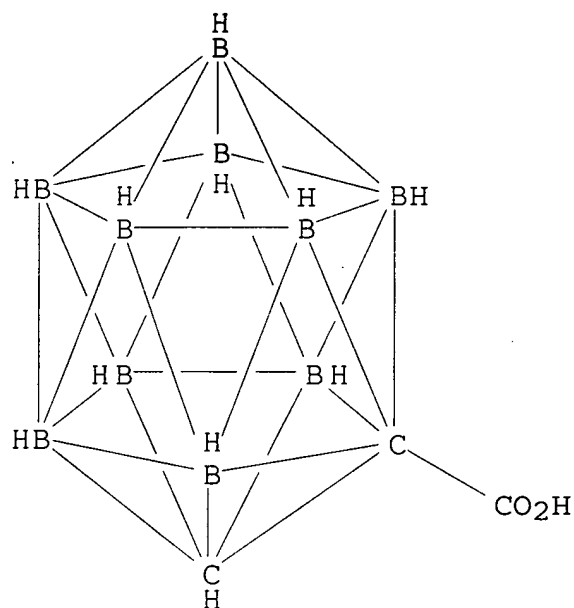


IT 18178-04-6, 1,2-Dicarbadoecaborane-1-carboxylic acid 18581-81-2, 1,7-Dicarbadoecaborane-1-carboxylic acid 23087-98-1, 1,12-Dicarbadoecaborane-1-carboxylic acid

(attempts at **generation** of **carboranyl** carbocation via solvolysis reaction of tosylates and triflates and kinetics of solvolysis)

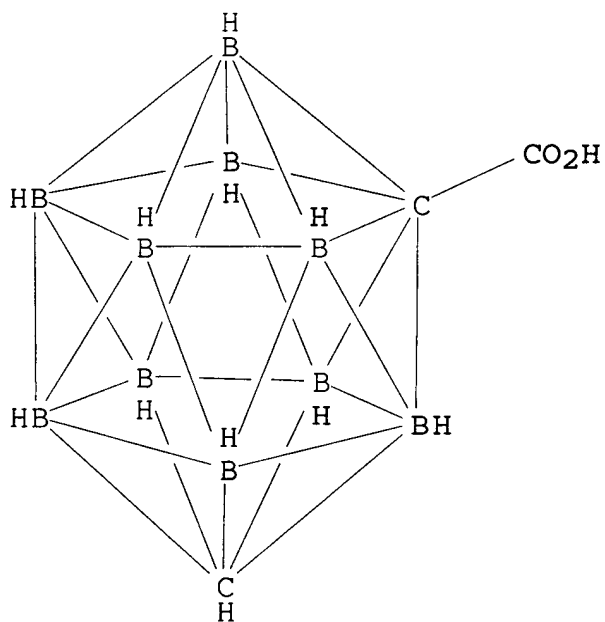
RN 18178-04-6 HCA

CN 1,2-Dicarbadoecaborane(12)-1-carboxylic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



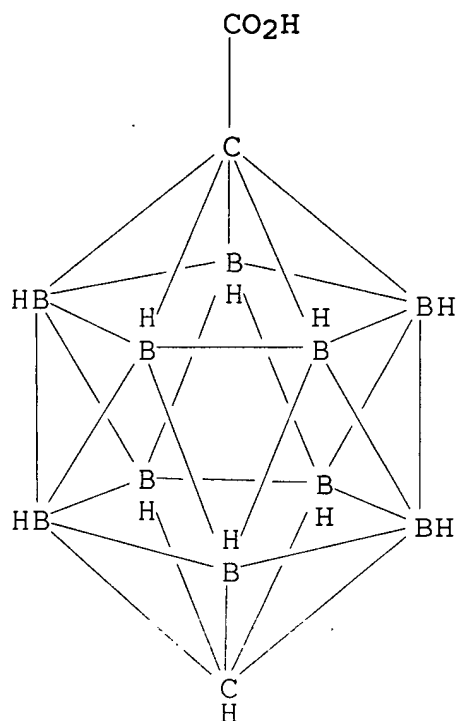
RN 18581-81-2 HCA

CN 1,7-Dicarbadoecaborane(12)-1-carboxylic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 23087-98-1 HCA

CN 1,12-Dicarbadoecaborane(12)-1-carboxylic acid (8CI, 9CI) (CA INDEX NAME)

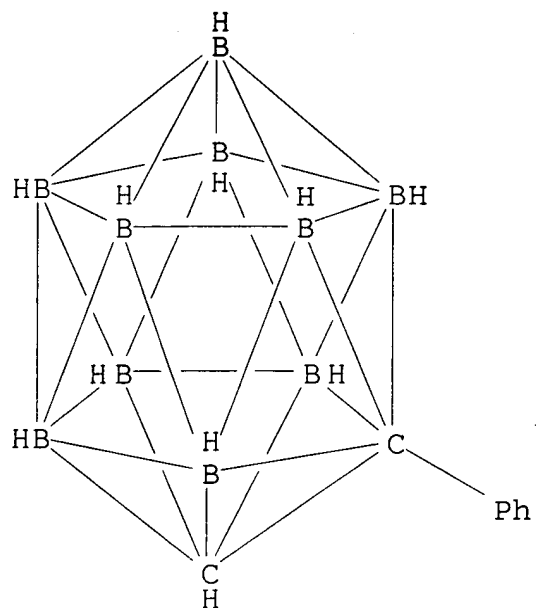


IT 16390-61-7P 16872-09-6P, 1,2-Dicarba-closo-dodecaborane(12) 16986-24-6P, 1,7-Dicarba-closo-dodecaborane(12) 18971-67-0P 20644-12-6P, 1,12-Dicarba-closo-dodecaborane(12) 20693-51-0P, 1,2-Dicarba-closo-dodecaboran(12)-1-amine 20755-89-9P, 1,7-Dicarba-closo-dodecaboran(12)-1-amine 23987-99-7P, 1,2-Dicarbadoecaboran(12)-1-ol 23988-02-5P, 1,7-Dicarbadoecaboran(12)-1-ol 27120-72-5P, 1,12-Dicarba-closo-dodecaboran(12)-1-amine 54360-43-9P, 1,12-Dicarbadoecaboran(12)-1-ol 55672-80-5P
70312-23-1P 111447-52-0P 113688-61-2P
174531-13-6P 643020-72-8P 643020-73-9P
643020-74-0P 643020-75-1P 643020-76-2P
643020-77-3P 643020-78-4P 643020-79-5P
643020-83-1P 643020-88-6P

(attempts at generation of **carboranyl** carbocation via solvolysis reaction of tosylates and triflates and kinetics of solvolysis)

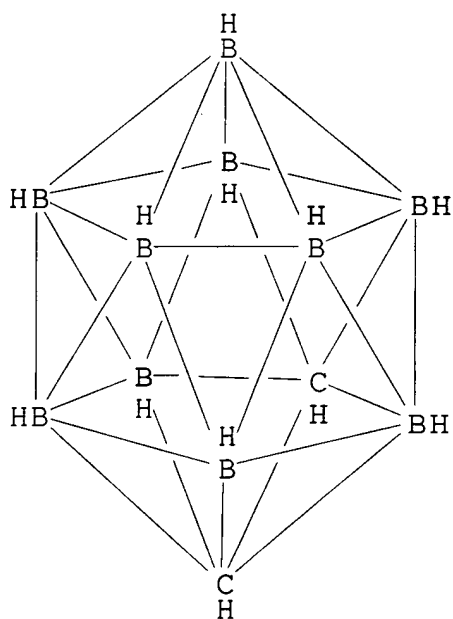
RN 16390-61-7 HCA

CN 1,2-Dicarbadoecaborane(12), 1-phenyl- (8CI, 9CI) (CA INDEX NAME)



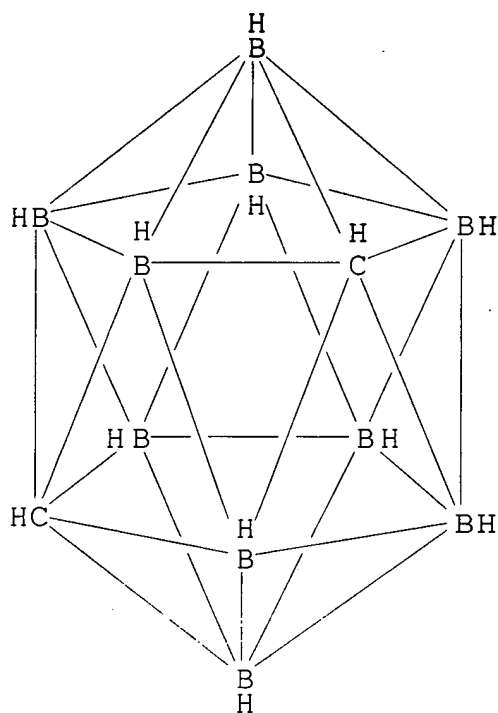
RN 16872-09-6 HCA

CN 1,2-Dicarbado-dodecaborane(12) (8CI, 9CI) (CA INDEX NAME)



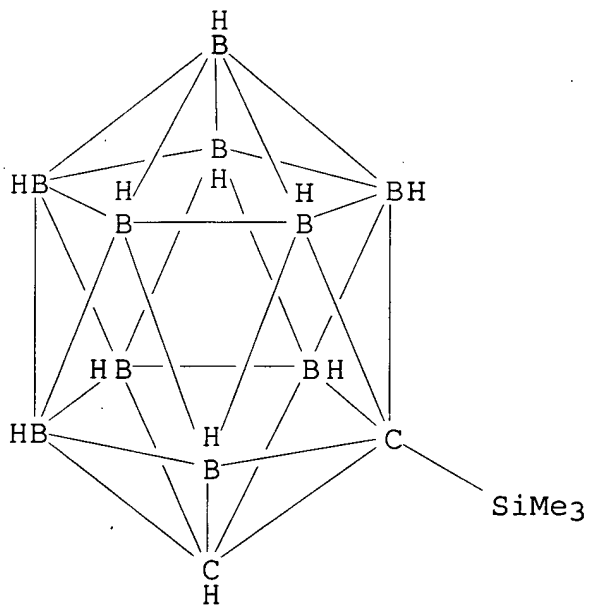
RN 16986-24-6 HCA

CN 1,7-Dicarbado-dodecaborane(12) (7CI, 8CI, 9CI) (CA INDEX NAME)



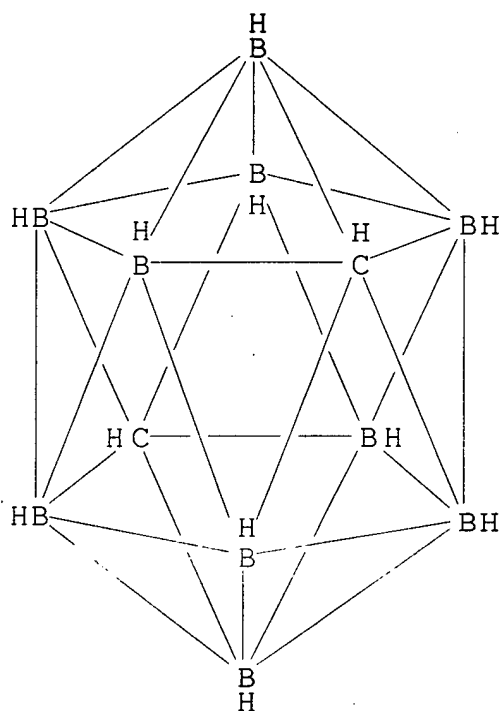
RN 18971-67-0 HCA

CN 1,2-Dicarbadodecaborane(12), 1-(trimethylsilyl)- (7CI, 8CI, 9CI)
(CA INDEX NAME)



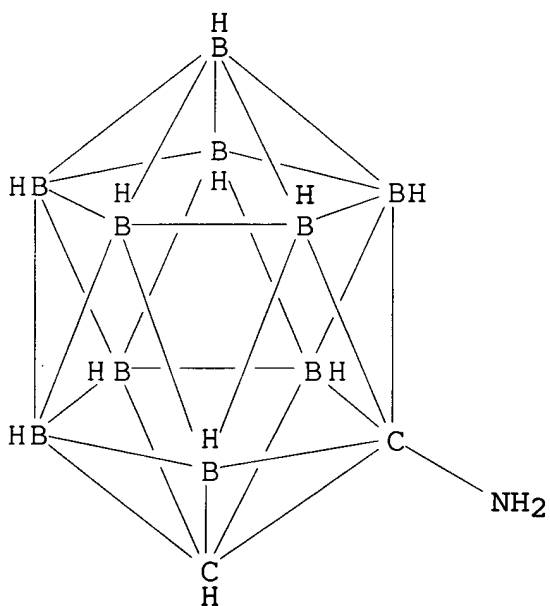
RN 20644-12-6 HCA

CN 1,12-Dicarbadoecaborane(12) (7CI, 8CI, 9CI) (CA INDEX NAME)



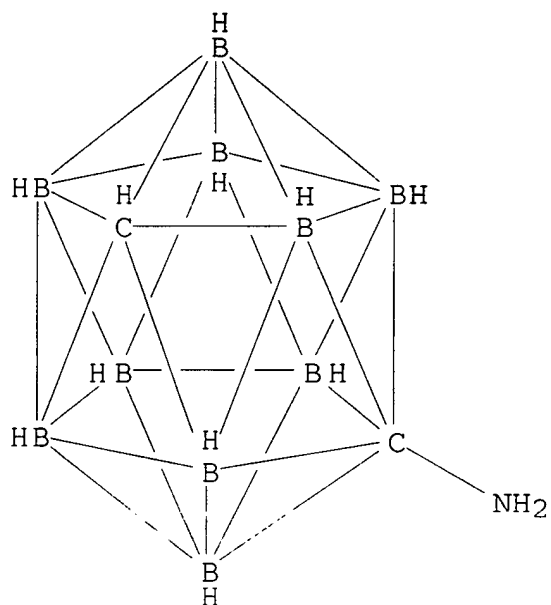
RN 20693-51-0 HCA

CN 1,12-Dicarbadoecaboran(12)-1-amine (7CI, 8CI, 9CI) (CA INDEX NAME)



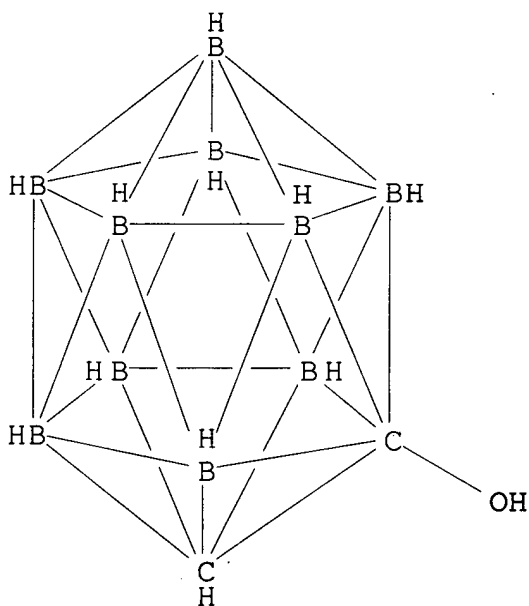
RN 20755-89-9 HCA

CN 1,7-Dicarbadoecaboran(12)-1-amine (7CI, 8CI, 9CI) (CA INDEX NAME)



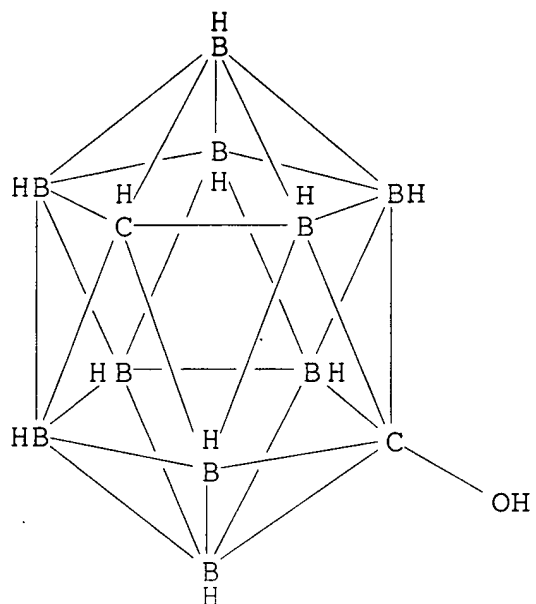
RN 23987-99-7 HCA

CN 1,2-Dicarbadoecaboran(12)-1-ol (8CI, 9CI) (CA INDEX NAME)



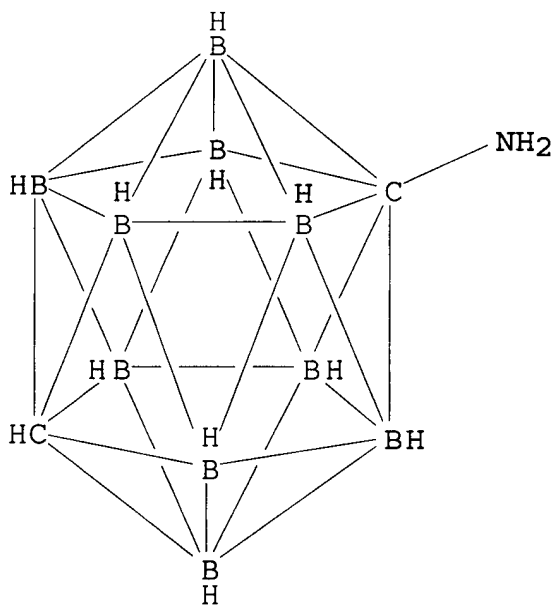
RN 23988-02-5 HCA

CN 1,7-Dicarbadodecaboran(12)-1-ol (8CI, 9CI) (CA INDEX NAME)



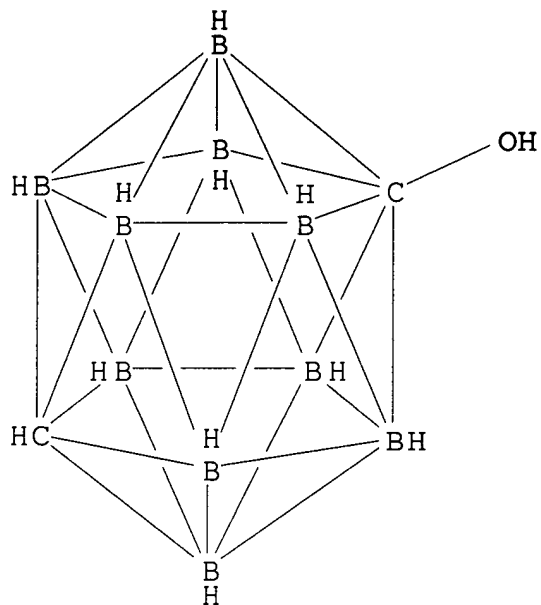
RN 27120-72-5 HCA

CN 1,12-Dicarbadodecaboran(12)-1-amine (8CI, 9CI) (CA INDEX NAME)



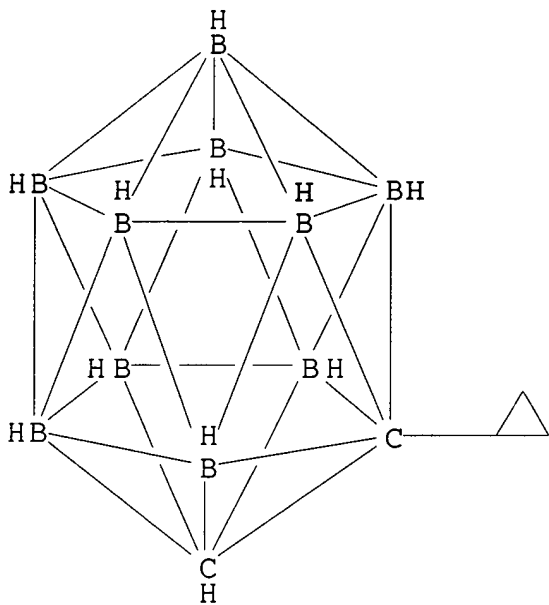
RN 54360-43-9 HCA

CN 1,12-Dicarbadodecaboran(12)-1-ol (9CI) (CA INDEX NAME)



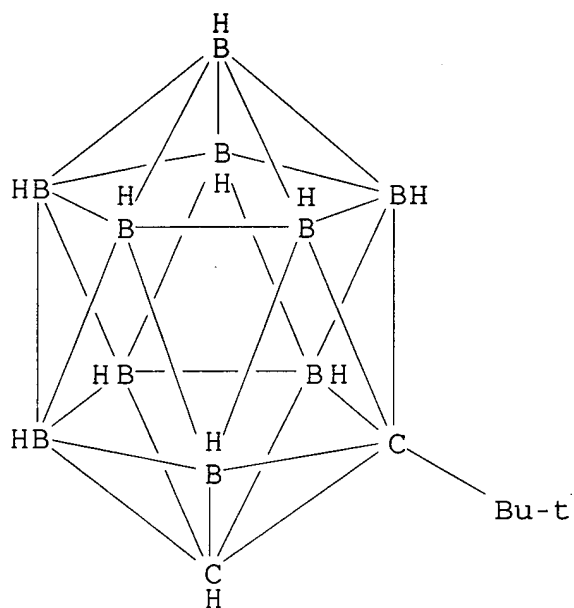
RN 55672-80-5 HCA

CN 1,2-Dicarbado-dodecaborane(12), 1-cyclopropyl- (9CI) (CA INDEX NAME)

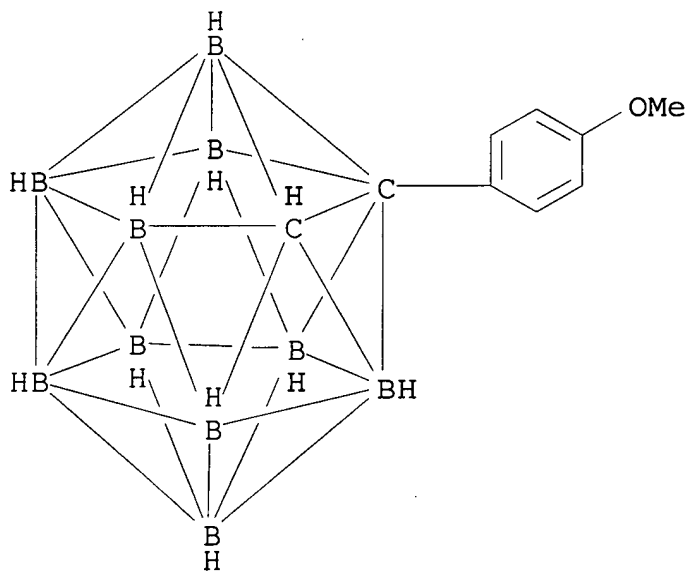


RN 70312-23-1 HCA

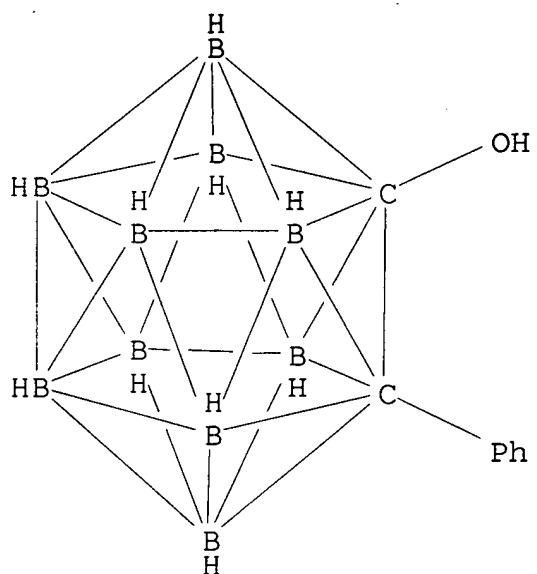
CN 1,2-Dicarbado-dodecaborane(12), 1-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 111447-52-0 HCA
 CN 1,2-Dicarbado-dodecaborane(12), 1-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

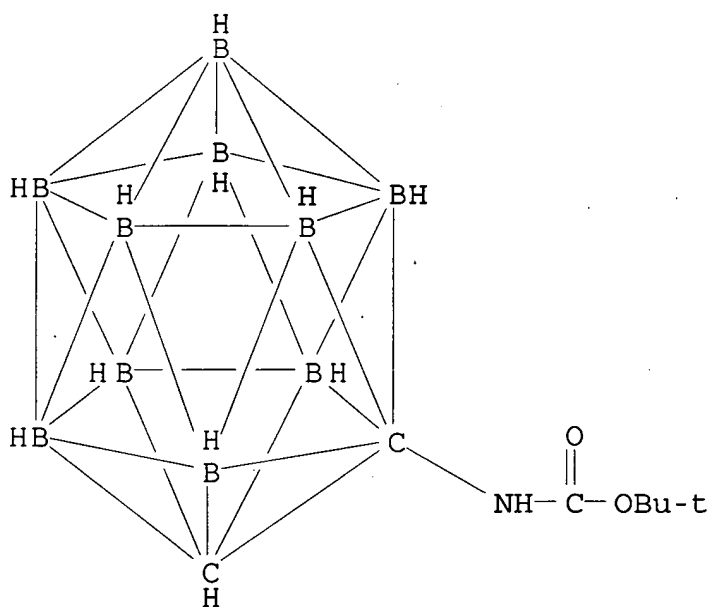


RN 113688-61-2 HCA
 CN 1,2-Dicarbado-dodecaborane(12)-1-ol, 2-phenyl- (9CI) (CA INDEX NAME)



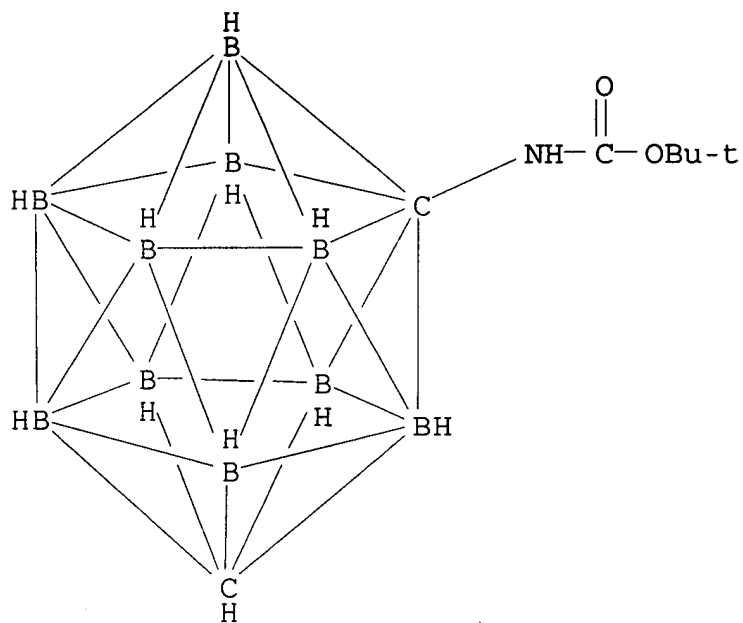
RN 174531-13-6 HCA

CN Carbamic acid, 1,2-dicarbadodecaboran(12)-1-yl-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



RN 643020-72-8 HCA

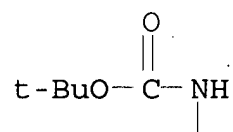
CN Carbamic acid, 1,7-dicarbadodecaboran(12)-1-yl-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



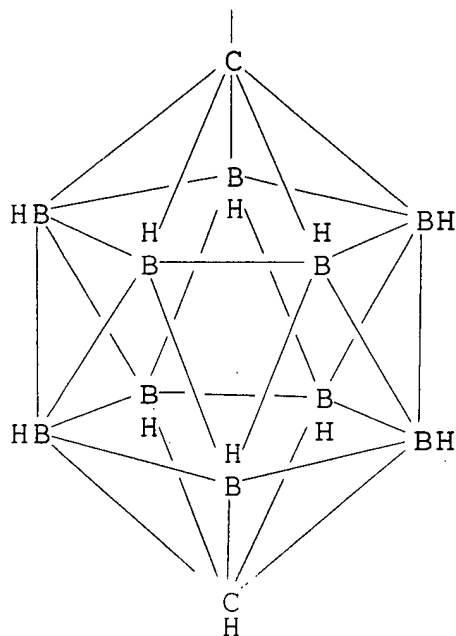
RN 643020-73-9 HCA

CN Carbamic acid, 1,12-dicarbadodecaboran(12)-1-yl-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

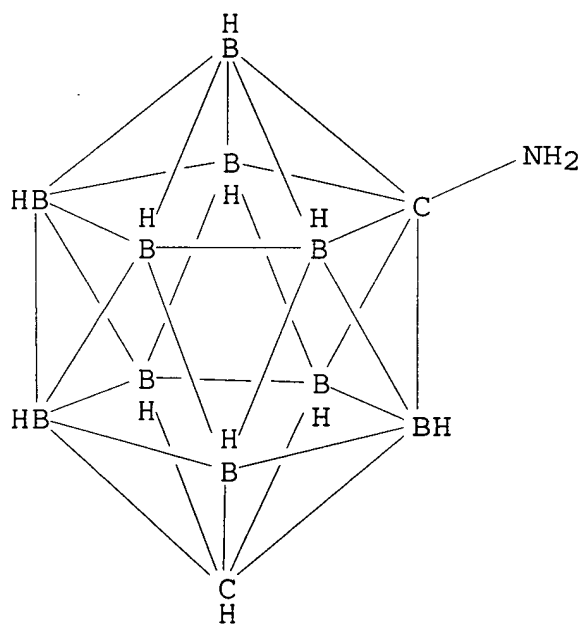
PAGE 1-A



PAGE 2-A



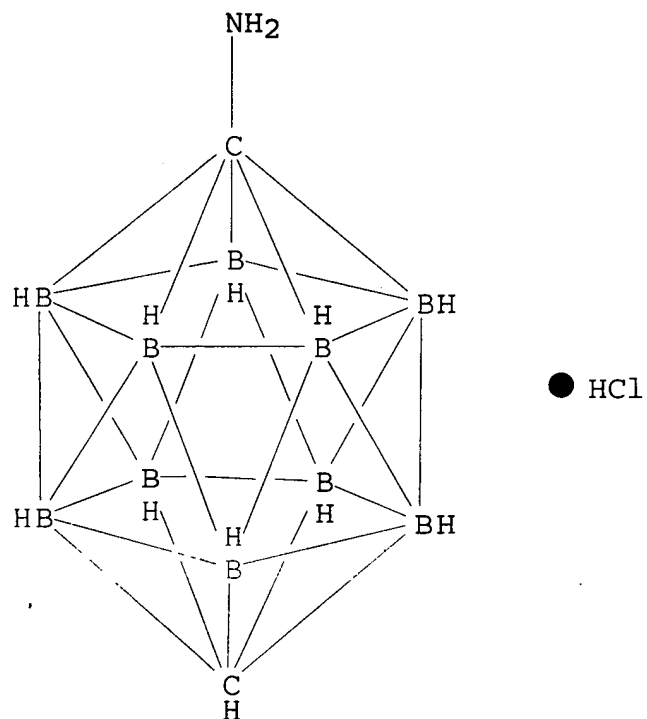
RN 643020-74-0 HCA
CN 1,7-Dicarbadoecaboran(12)-1-amine, hydrochloride (9CI) (CA INDEX NAME)



● HCl

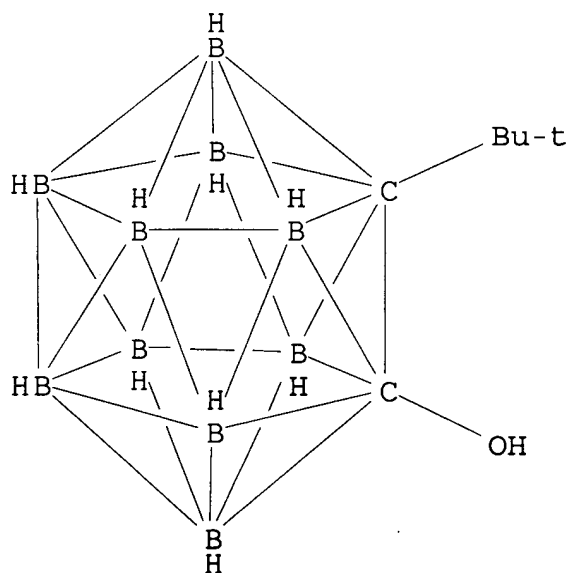
RN 643020-75-1 HCA

CN 1,12-Dicarbadodecaboran(12)-1-amine, hydrochloride (9CI) (CA INDEX NAME)

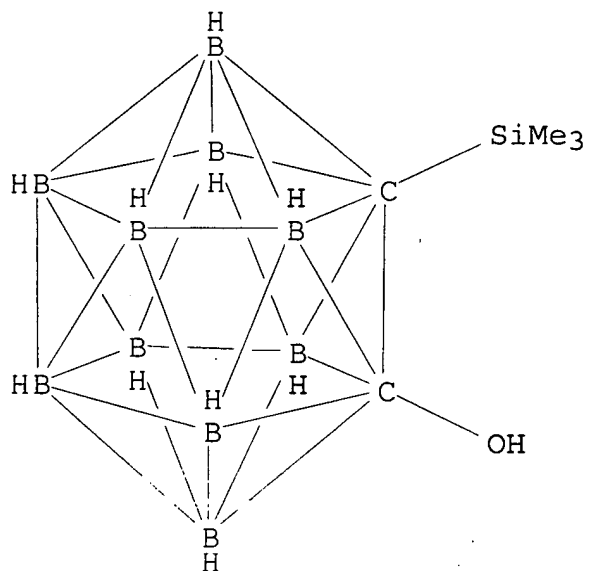


RN 643020-76-2 HCA

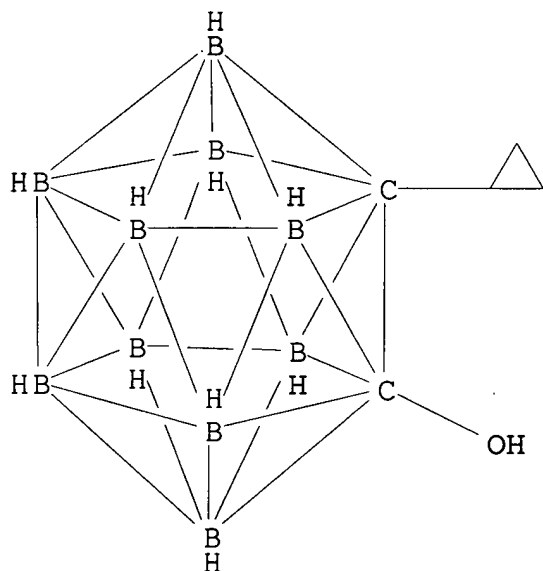
CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 643020-77-3 HCA

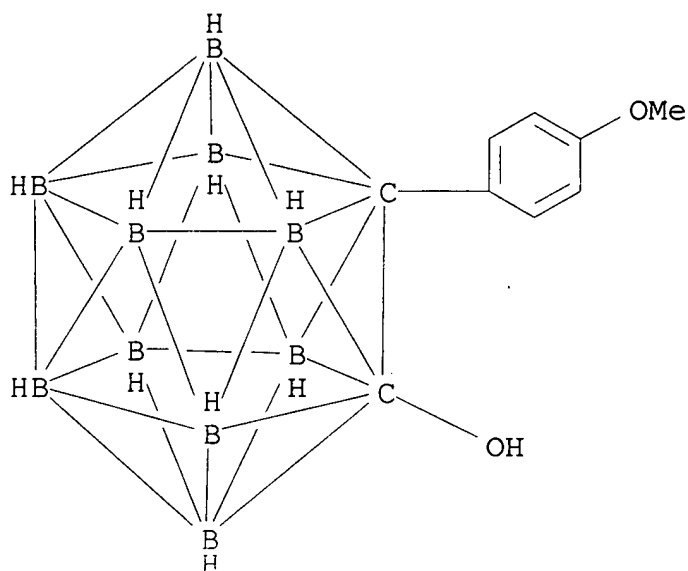
CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-(trimethylsilyl)- (9CI) (CA
INDEX NAME)

RN 643020-78-4 HCA

CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-cyclopropyl- (9CI) (CA INDEX
NAME)

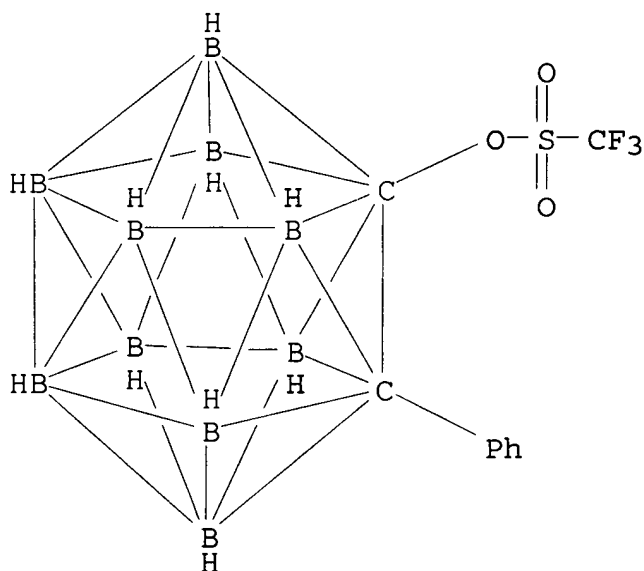
RN 643020-79-5 HCA

CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



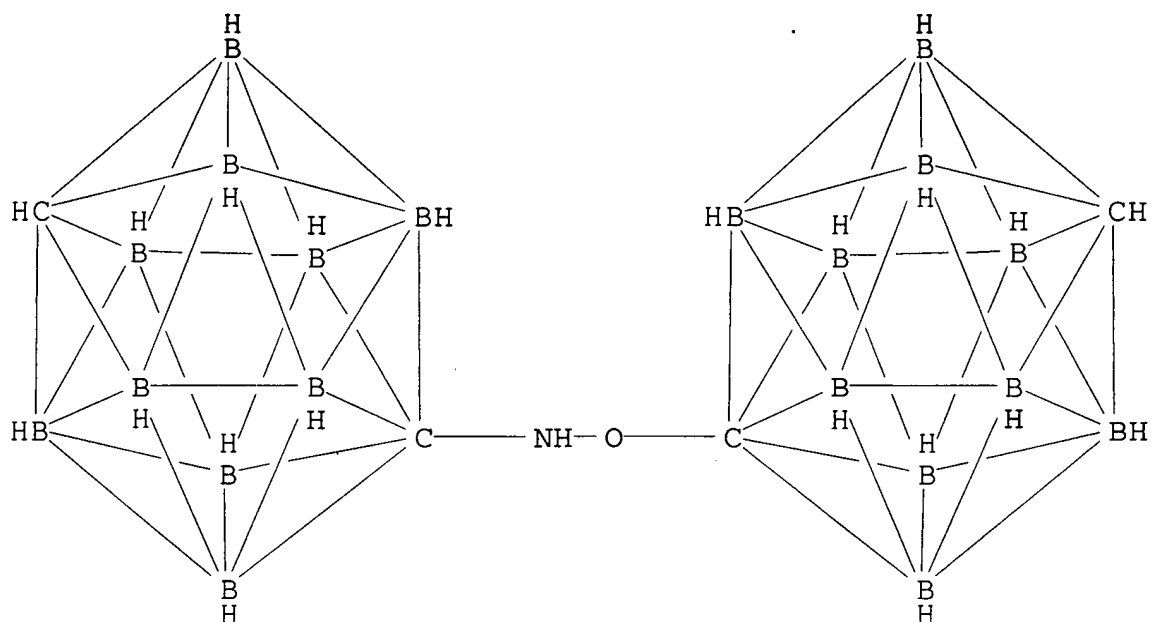
RN 643020-83-1 HCA

CN Methanesulfonic acid, trifluoro-, 2-phenyl-1,2-dicarbadodecaboran(12)-1-yl ester (9CI) (CA INDEX NAME)



RN 643020-88-6 HCA

CN 1,12-Dicarbadodecaboran(12)-1-amine, N-(1,12-dicarbadodecaboran(12)-1-yloxy)- (9CI) (CA INDEX NAME)

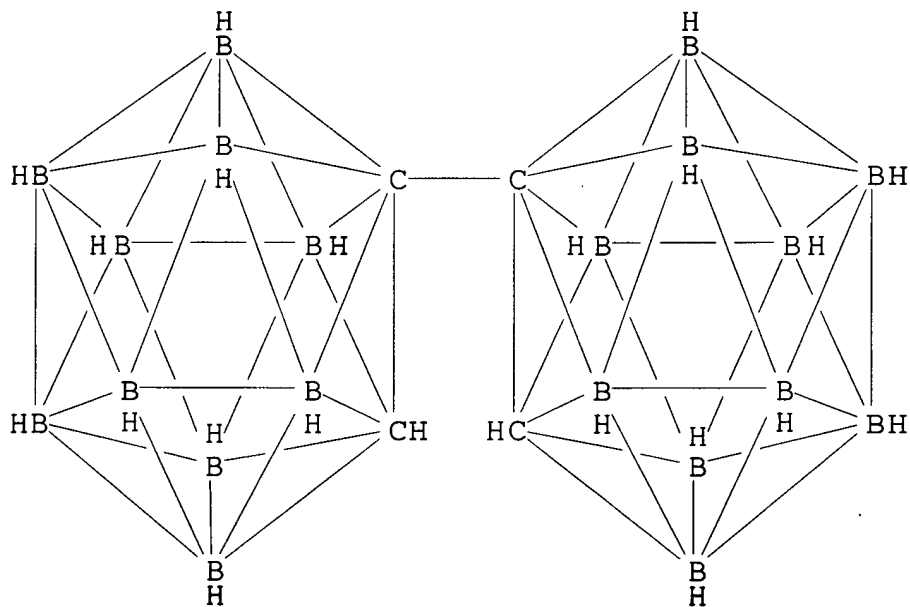


IT 12075-02-4P, 1,1'-Bi-1,2-dicarbadoecaborane(12)

(attempts at generation of **carboranyl** carbocation via
solvolysis reaction of tosylates and triflates and kinetics of
solvolysis)

RN 12075-02-4 HCA

CN 1,1'-Bi-1,2-dicarbadoecaborane(12) (7CI, 8CI, 9CI) (CA INDEX NAME)

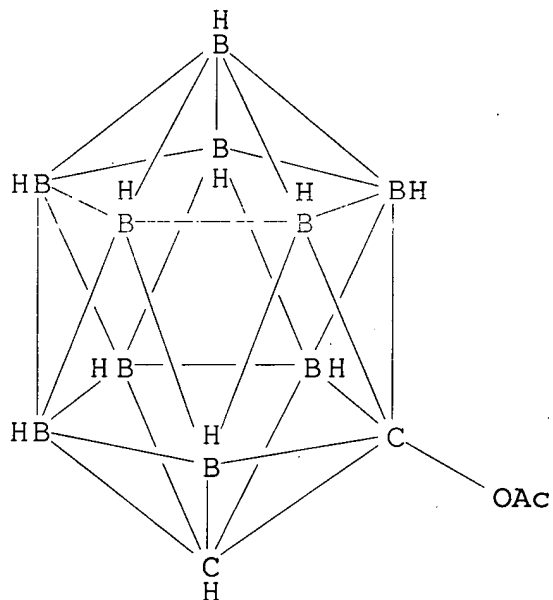


IT 23883-37-6P 34088-76-1P 643020-80-8P
 643020-81-9P 643020-82-0P 643020-84-2P
 643020-85-3P 643020-86-4P 643020-87-5P
 643020-89-7P 643020-90-0P 643020-91-1P
 643020-92-2P 643020-93-3P 643020-94-4P
 643020-95-5P

(solvolysis; attempts at generation of **carboranyl**
 carbocation via solvolysis reaction of tosylates and triflates
 and kinetics of solvolysis)

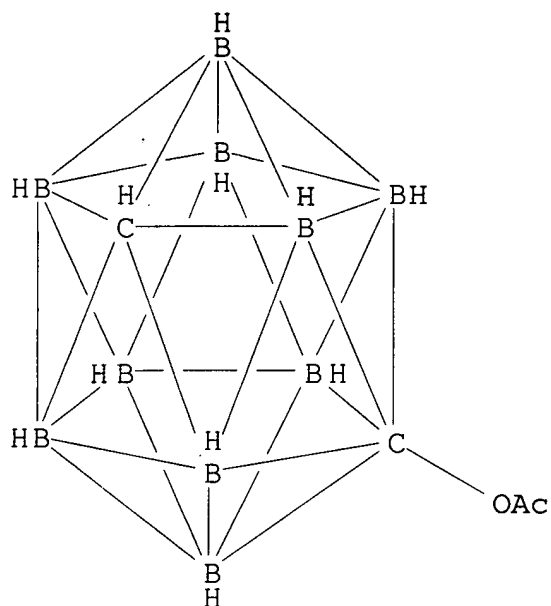
RN 23883-37-6 HCA

CN 1,2-Dicarbadoecaboran(12)-1-ol, acetate (7CI, 8CI, 9CI) (CA INDEX
 NAME)



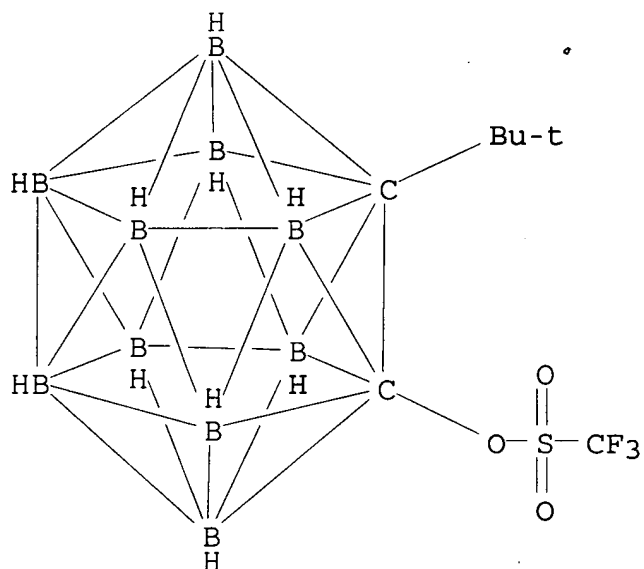
RN 34088-76-1 HCA

CN 1,7-Dicarbadoecaboran(12)-1-ol, acetate (8CI, 9CI) (CA INDEX NAME)



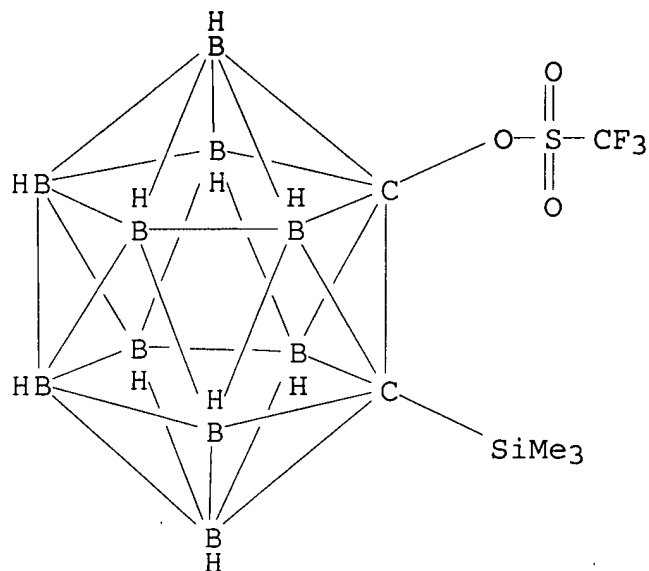
RN 643020-80-8 HCA

CN Methanesulfonic acid, trifluoro-, 2-(1,1-dimethylethyl)-1,2-dicarbadoecaboran(12)-1-yl ester (9CI) (CA INDEX NAME)

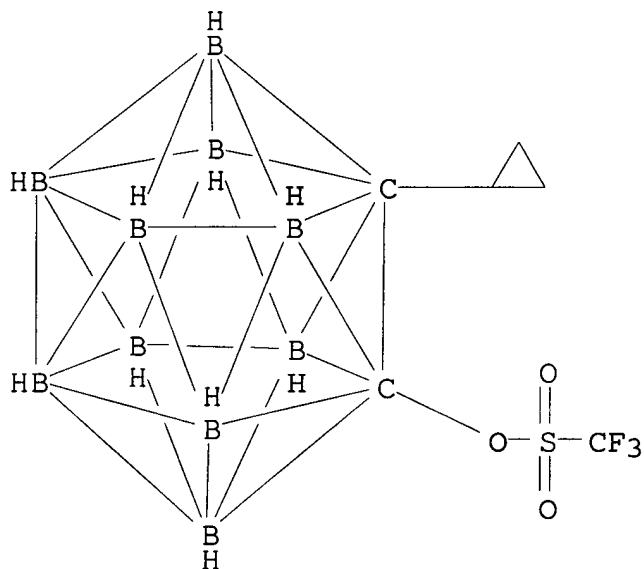


RN 643020-81-9 HCA

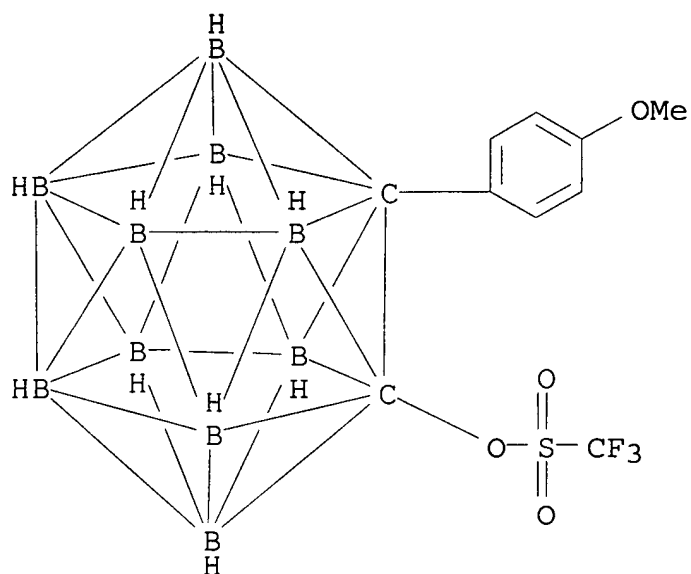
CN Methanesulfonic acid, trifluoro-, 2-(trimethylsilyl)-1,2-dicarbadoecaboran(12)-1-yl ester (9CI) (CA INDEX NAME)



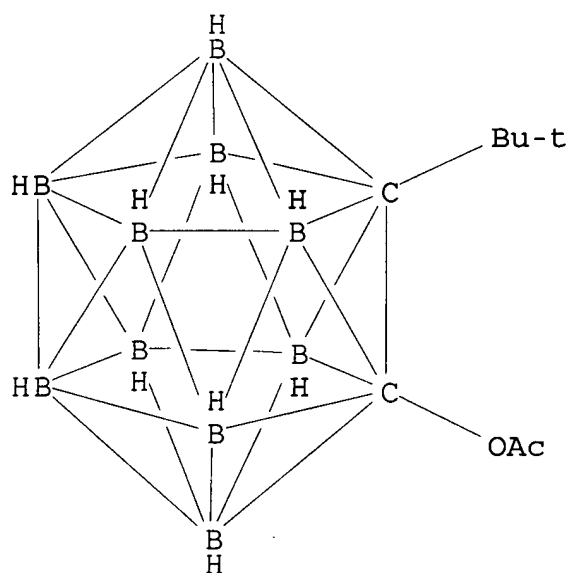
RN 643020-82-0 HCA
 CN Methanesulfonic acid, trifluoro-, 2-cyclopropyl-1,2-dicarbadodecaboran(12)-1-yl ester (9CI) (CA INDEX NAME)



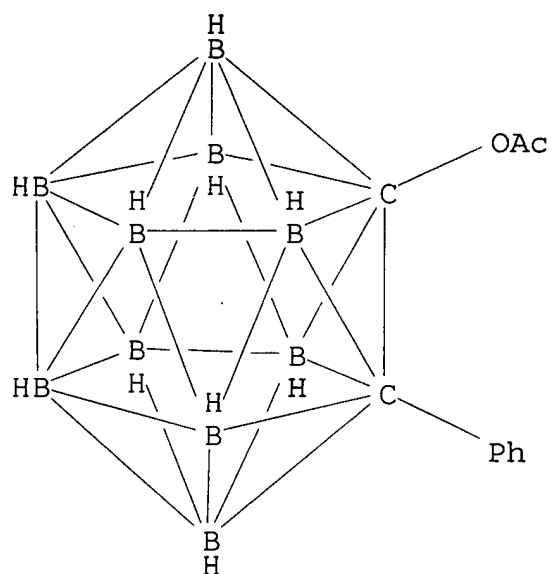
RN 643020-84-2 HCA
 CN Methanesulfonic acid, trifluoro-, 2-(4-methoxyphenyl)-1,2-dicarbadodecaboran(12)-1-yl ester (9CI) (CA INDEX NAME)



RN 643020-85-3 HCA
 CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-(1,1-dimethylethyl)-, acetate
 (9CI) (CA INDEX NAME)

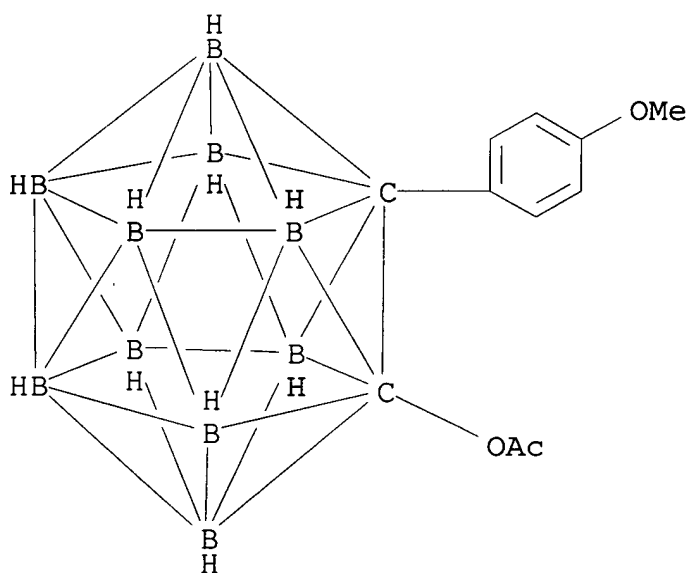


RN 643020-86-4 HCA
 CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-phenyl-, acetate (9CI) (CA INDEX
 NAME)



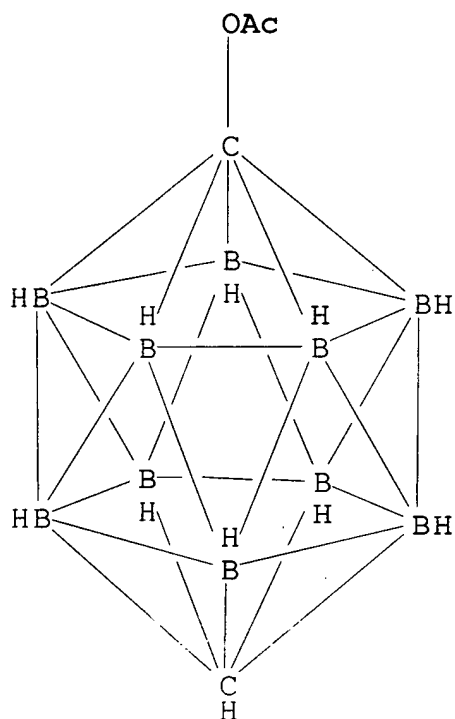
RN 643020-87-5 HCA

CN 1,2-Dicarbadodecaboran(12)-1-ol, 2-(4-methoxyphenyl)-, acetate (9CI)
(CA INDEX NAME)



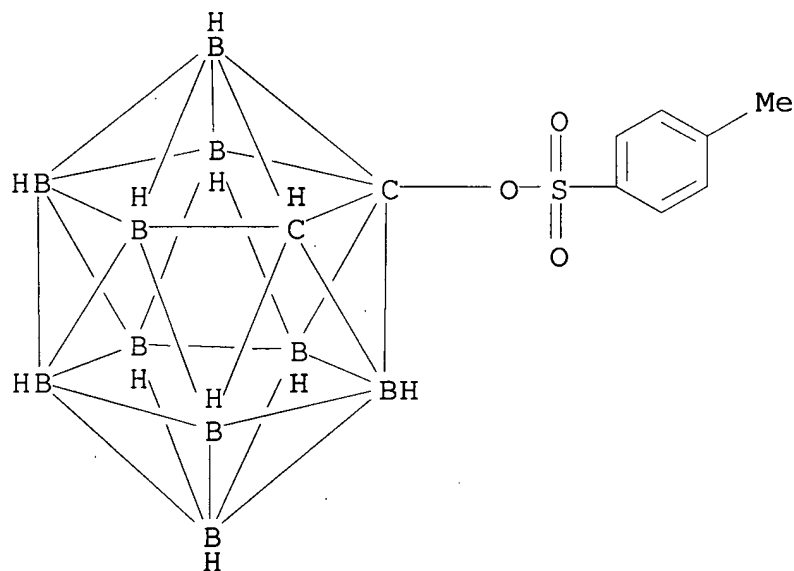
RN 643020-89-7 HCA

CN 1,12-Dicarbadodecaboran(12)-1-ol, acetate (9CI) (CA INDEX NAME)



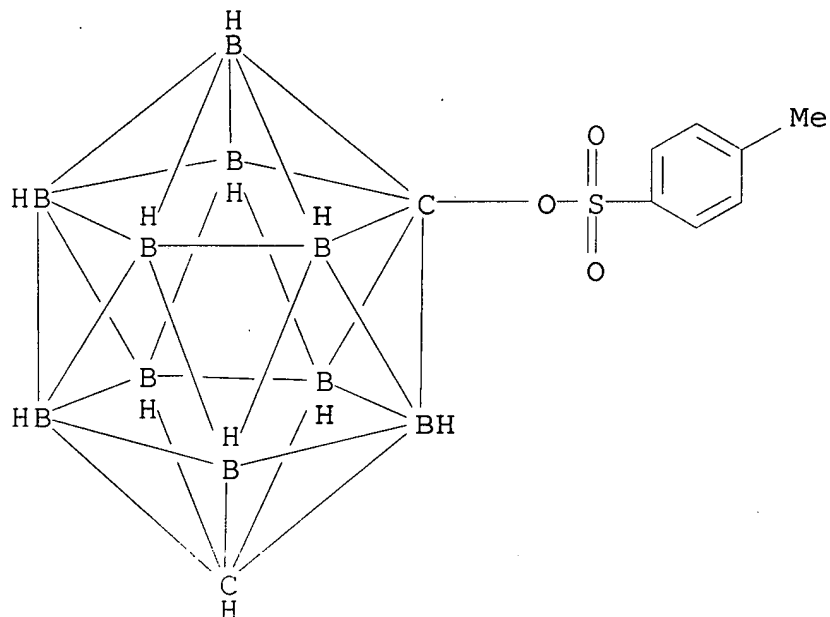
RN 643020-90-0 HCA

CN 1,2-Dicarbadodecaborane(12)-1-ol, 4-methylbenzenesulfonate (9CI) (CA INDEX NAME)



RN 643020-91-1 HCA

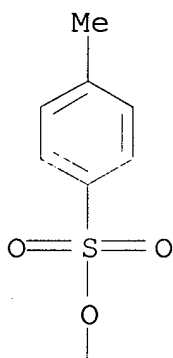
CN 1,7-Dicarbadoecaboran(12)-1-ol, 4-methylbenzenesulfonate (9CI) (CA INDEX NAME)



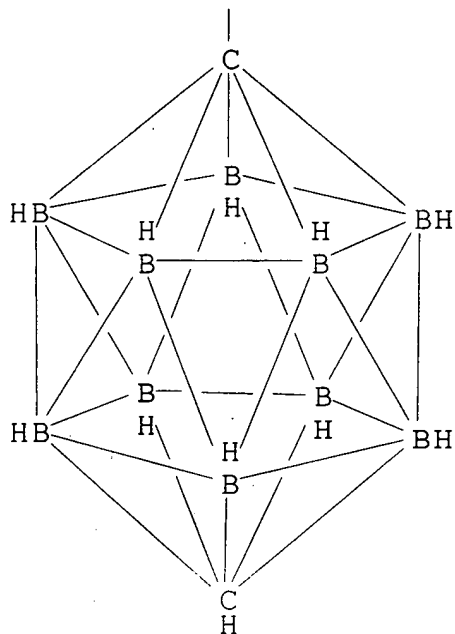
RN 643020-92-2 HCA

CN 1,12-Dicarbadoecaboran(12)-1-ol, 4-methylbenzenesulfonate (9CI)
(CA INDEX NAME)

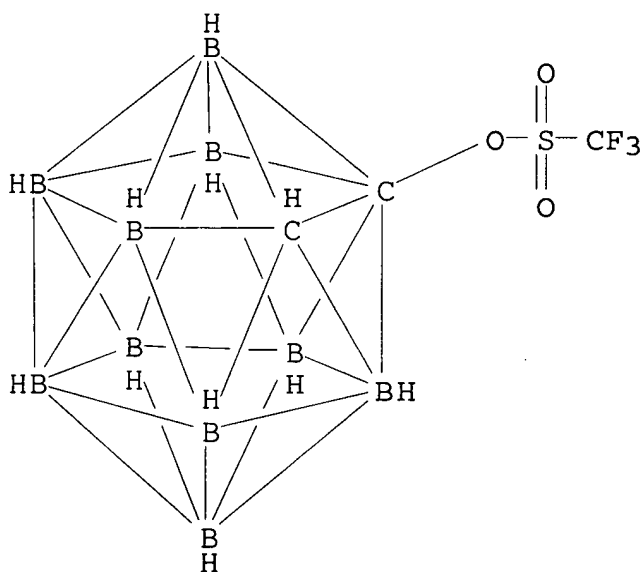
PAGE 1-A



PAGE 2-A

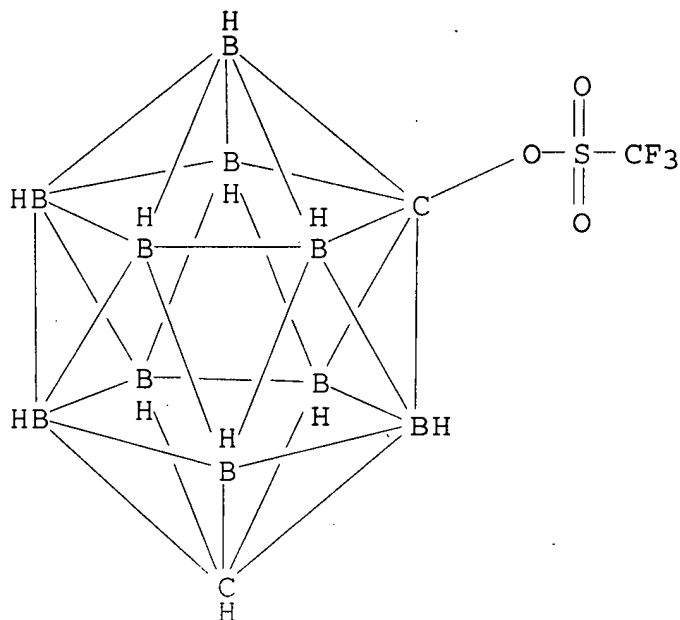


RN 643020-93-3 HCA
CN Methanesulfonic acid, trifluoro-, 1,2-dicarbadodecaboran(12)-1-yl
ester (9CI) (CA INDEX NAME)



RN 643020-94-4 HCA
CN Methanesulfonic acid, trifluoro-, 1,7-dicarbadodecaboran(12)-1-yl

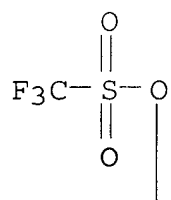
ester (9CI) (CA INDEX NAME)



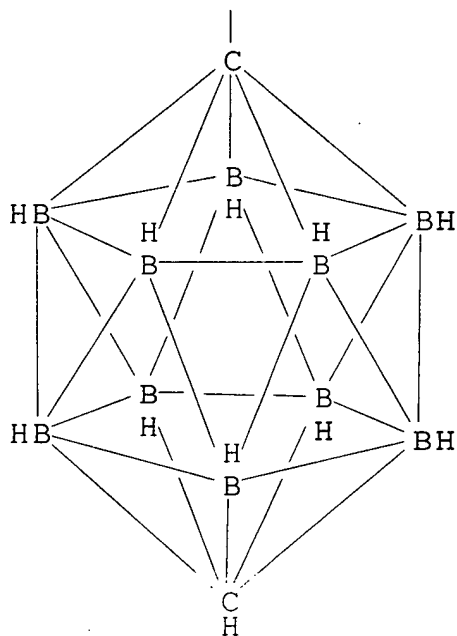
RN 643020-95-5 HCA

CN Methanesulfonic acid, trifluoro-, 1,12-dicarbadodecaboran(12)-1-yl
ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- CC 29-4 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 22
- ST quest **carboranyl** carbocation generation;
hydroxycarborane amine prepn reaction; **carboranyl**
triflate acetate prepn solvolysis kinetics
- IT Hyperconjugation
Neighboring group participation
Solvolysis kinetics
Substituent effects
(attempts at generation of **carboranyl** carbocation via
solvolysis reaction of tosylates and triflates and kinetics of
solvolysis)
- IT **Carboranes**
(carbocations; attempts at generation of **carboranyl**
carbocation via solvolysis reaction of tosylates and triflates
and kinetics of solvolysis)
- IT Carbocations
(**carboranyl**; attempts at generation of
carboranyl carbocation via solvolysis reaction of
tosylates and triflates and kinetics of solvolysis)
- IT **643020-96-6**
(attempts at generation of **carboranyl** carbocation via
solvolysis reaction of tosylates and triflates and kinetics of
solvolysis)
- IT 536-74-3, Phenylacetylene 696-62-8, 4-Iodoanisole 765-43-5,

Cyclopropyl methyl ketone 917-92-0, tert-Butylacetylene
 1066-54-2, Trimethylsilylacetylene 17702-41-9, Decaborane(14)
 18178-04-6, 1,2-Dicarbadoecaborane-1-carboxylic
 acid 18581-81-2, 1,7-Dicarbadoecaborane-1-
 carboxylic acid 23087-98-1, 1,12-
 Dicarbadoecaborane-1-carboxylic acid 28377-97-1

(attempts at generation of carboranyl
 carbocation via solvolysis reaction of tosylates and triflates
 and kinetics of solvolysis)

IT 768-60-5P, 4-Methoxyphenylacetylene 3989-14-8P,
 1-(4-Methoxyphenyl)-2-(trimethylsilyl)acetylene 16390-61-7P
 16872-09-6P, 1,2-Dicarbadoecaborane(12)
 16986-24-6P, 1,7-Dicarbadoecaborane(12)
 18971-67-0P 20644-12-6P, 1,12-Dicarbadoecaborane(12) 20693-51-0P, 1,2-Dicarbadoecaborane(12)-1-amine 20755-89-9P, 1,7-Dicarbadoecaborane(12)-1-amine 23987-99-7P, 1,2-Dicarbadoecaborane(12)-1-ol 23988-02-5P,
 1,7-Dicarbadoecaborane(12)-1-ol 27120-72-5P,
 1,12-Dicarbadoecaborane(12)-1-amine 40459-85-6P,
 1,1,-Dichloro-1-cyclopropylethane 54360-43-9P,
 1,12-Dicarbadoecaborane(12)-1-ol 55672-80-5P
 70312-23-1P 111447-52-0P 113688-61-2P
 174531-13-6P 643020-72-8P 643020-73-9P
 643020-74-0P 643020-75-1P 643020-76-2P
 643020-77-3P 643020-78-4P 643020-79-5P
 643020-83-1P 643020-88-6P

(attempts at generation of carboranyl carbocation via
 solvolysis reaction of tosylates and triflates and kinetics of
 solvolysis)

IT 12075-02-4P, 1,1'-Bi-1,2-dicarbadoecaborane(12)
 (attempts at generation of carboranyl carbocation via
 solvolysis reaction of tosylates and triflates and kinetics of
 solvolysis)

IT 23883-37-6P 34088-76-1P 643020-80-8P
 643020-81-9P 643020-82-0P 643020-84-2P
 643020-85-3P 643020-86-4P 643020-87-5P
 643020-89-7P 643020-90-0P 643020-91-1P
 643020-92-2P 643020-93-3P 643020-94-4P
 643020-95-5P

(solvolysis; attempts at generation of carboranyl
 carbocation via solvolysis reaction of tosylates and triflates
 and kinetics of solvolysis)

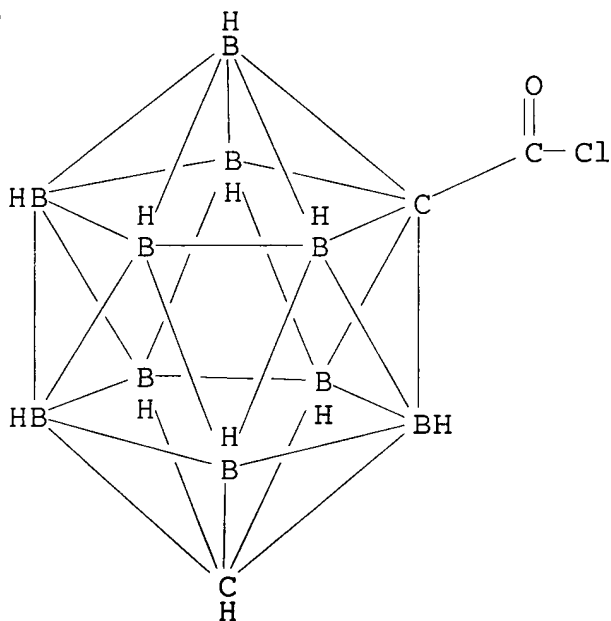
L28 ANSWER 9 OF 34 HCA COPYRIGHT 2006 ACS on STN

139:108560 Organoelement **resists** for EUV lithography

. Dai, Junyan; Ober, Christopher Kemper; Wang, Lin; Cerrina,
 Franco; Nealey, Paul F. (Mater. Sci. Eng., Cornell Univ., Ithaca,

NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 1193-1202 (English) 2002. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

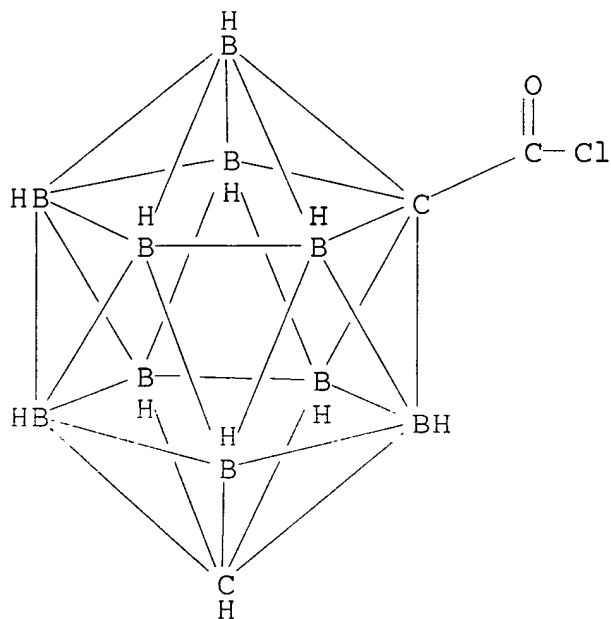
- AB Extreme-UV (EUV) lithog. is perhaps the most promising of the NGL technologies for sub-100 nm resolu. To address needs in this area, the authors designed and synthesized several types of organo-element **resists** using only low absorbing elements, including H, C, Si and B. One category is based on silicon-contg. block and random polymers. They show high transparency according to theor. simulations and have high oxygen reactive ion etch resistances compared to Novolak resins. In a preliminary study, the authors were able to image these polymers to 180 nm line/space patterns using EUV exposure. A second type of EUV transparent **resist** platform involves boron-contg. polymers. **Carborane** carboxylic acid was attached to a copolymer backbone to introduce boron atoms with controlled attachment level. It was found that incorporation of a small amt. of B provides remarkably high oxygen etch resistance.
- IT 40101-88-0DP, reaction product with hydrolyzed isoprene-styrene block copolymer
(hydroboration of isoprene-styrene block copolymer for extreme-UV **photoresist** application)
- RN 40101-88-0 HCA
- CN 1,7-Dicarbadoecaborane(12)-1-carbonyl chloride (9CI) (CA INDEX NAME)



IT 40101-88-0P

(hydroboration of isoprene-styrene block copolymer for extreme-UV
photoresist application)

RN 40101-88-0 HCA

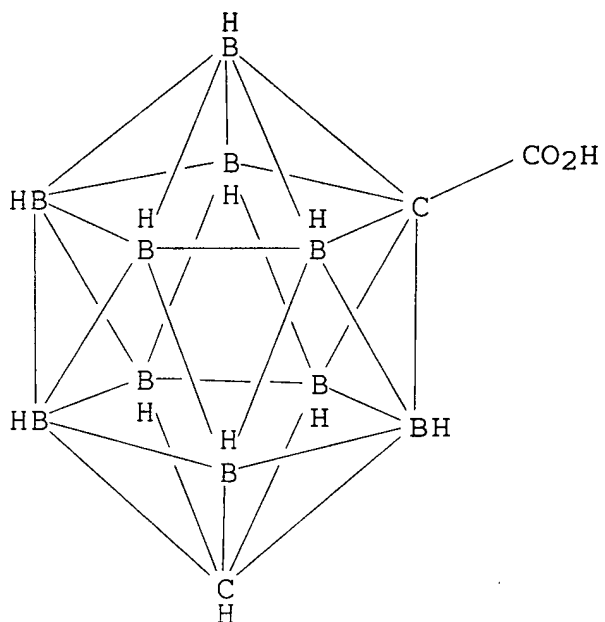
CN 1,7-Dicarbadoecaborane(12)-1-carbonyl chloride (9CI) (CA INDEX
NAME)

IT 18581-81-2P 61383-01-5P

(prepn. of carboranecarboxylic chloride)

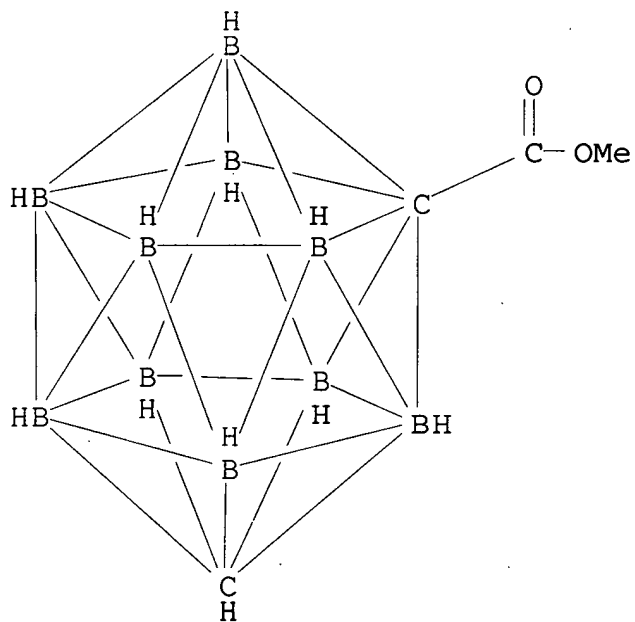
RN 18581-81-2 HCA

CN 1,7-Dicarbadoecaborane(12)-1-carboxylic acid (7CI, 8CI, 9CI) (CA
INDEX NAME)



RN 61383-01-5 HCA

CN 1,7-Dicarbadodecaborane(12)-1-carboxylic acid, methyl ester (9CI)
(CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

ST extreme UV lithog photoresist silicon boron

- contg polymer
- IT Polymers, properties
(block; synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT X-ray resists
(design and properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV lithog. in relation to)
- IT Negative photoresists
(extreme-UV; design and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV lithog.)
- IT Photoresists
(extreme-UV; design and properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV lithog.)
- IT Optical transmission
(extreme-UV; synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT Etching
(plasma, resistance; synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT Hydroboration
Hydrosilylation
Polymer morphology
(synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT 557099-49-7
(comparison compd.; synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT 40101-88-ODP, reaction product with hydrolyzed isoprene-styrene block copolymer
(hydroboration of isoprene-styrene block copolymer for extreme-UV photoresist application)
- IT 40101-88-OP
(hydroboration of isoprene-styrene block copolymer for extreme-UV photoresist application)
- IT 7782-44-7, Oxygen, uses

(plasma etch; synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)

- IT 18581-81-2P 61383-01-5P
(prepn. of **carboranecarboxylic** chloride)
- IT 557099-43-1P, Dimethylphenylvinylsilane-isoprene block copolymer
(synthesis and etch resistance of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT 617-86-7DP, Triethylsilane, reaction product with isoprene-styrene block copolymer 758-21-4DP, Dimethylethylsilane, reaction product with isoprene-styrene block copolymer 766-77-8DP, Dimethylphenylsilane, reaction product with isoprene-styrene block copolymer 51458-06-1DP, Dimesitylborane, reaction product with hydrolyzed isoprene-styrene block copolymer 105729-79-1DP, Isoprene-styrene block copolymer, hydrosilylation and hydroboration products 122551-15-9P, 4-Pentamethyldisilylstyrene-p-chloromethylstyrene copolymer 557099-44-2P, p-Trimethylsilylstyrene-isoprene block copolymer 557099-45-3P, p-Trimethylsilylstyrene-p-chloromethylstyrene copolymer
(synthesis and lithog. properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV lithog. resist application)
- IT 1009-43-4P, p-Trimethylsilylstyrene 114442-01-2P, 4-Pentamethyldisilylstyrene
(synthesis of silicon-contg. block and random polymers and boron-contg. polymers for resists for extreme-UV lithog.)

L28 ANSWER 10 OF 34 HCA COPYRIGHT 2006 ACS on STN

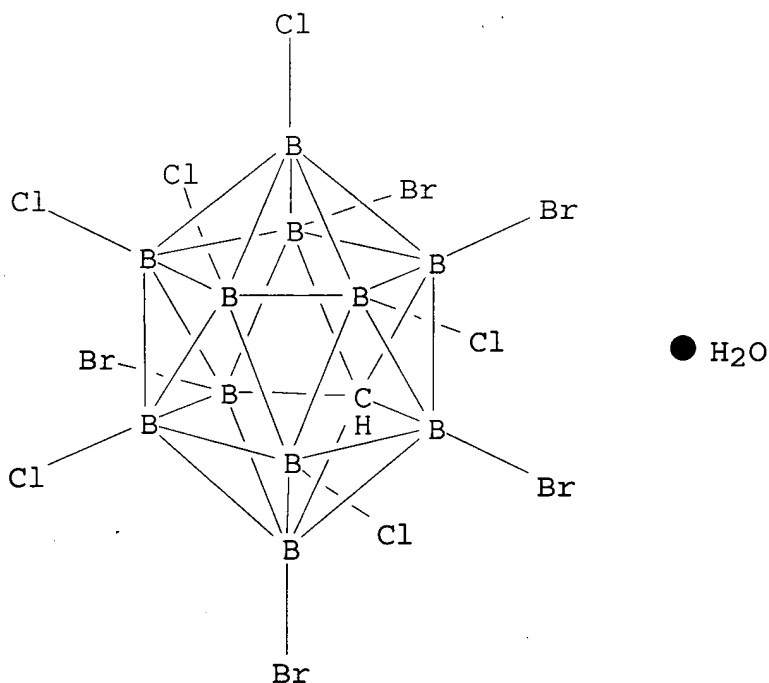
- 138:271719 Synthesis and structure of solvated protons incorporating weakly coordinating anions. Precursors of **superacids**.
Tsang, Chi-Wing; Yang, Qing-Chuan; Mak, Thomas C. W.; Xie, Zuo-Wei (Department of Chemistry, The Chinese University of Hong Kong, Hong Kong, Peop. Rep. China). Chinese Journal of Chemistry, 20(11), 1241-1248 (English) 2002. CODEN: CJOCEV. ISSN: 1001-604X. OTHER SOURCES: CASREACT 138:271719. Publisher: Science Press.
- AB Six new solvated proton salts of perhalogenated **carborane** anions, $[H(solvent)_n][carborane]$ (solvent = H₂O, Et₂O, DMF) were prep'd. in high yields and studied by x-ray crystallog. Reaction of silver salts of perhalogenated **monocarboranes** with aq. HCl gave corresponding solvated acids, $[H+(solvent)_n][1-R-CB_{11}X_{11}]$ (1, R = Me, X = Br; 2, R = H, X = Br; 6, R = H, X = I), $[H+(solvent)_n][1-R-CB_{11}-2,3,4,5,6-Y_5-7,8,9,10,11,12-X_6]$ (3, R = H, Y = Br, X = Cl; 5, R = H, Y = Cl, X = Br) and $[H+(H_2O)_4][1-H-CB_9Br_9]$, where solvent = H₂O (1), (H₂O)₂ (3), (H₂O)₃ (2), (H₂O) (DMF) (5) and (H₂O) (Et₂O) (6). Single-crystal x-ray analyses show that compds.

1-6 are all discrete mols. in the solid state. The no. of the solvated mols. surrounding H^+ ion do not correlate with the size and substituents of the **carborane** anions. These salts provide convenient weighable sources of Bronsted acid reagents having a wide range of acidities and good thermal stabilities. TGA results indicate that the solvated mols. (water or org. mols.) in the cations $[H(solvent)_n]^+$ can be removed under high temp. and high vacuum conditions to give **superacidic** materials $H(\text{carborane})$ which can protonate olefin.

IT 503570-59-0P
(crystal structure, thermal dehydration, alkene protonation; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)

RN 503570-59-0 HCA
CN 1-Carbadodecaborate(1-), 2,3,4,5,6-pentabromo-7,8,9,10,11,12-hexachloro-, oxonium, monohydrate (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

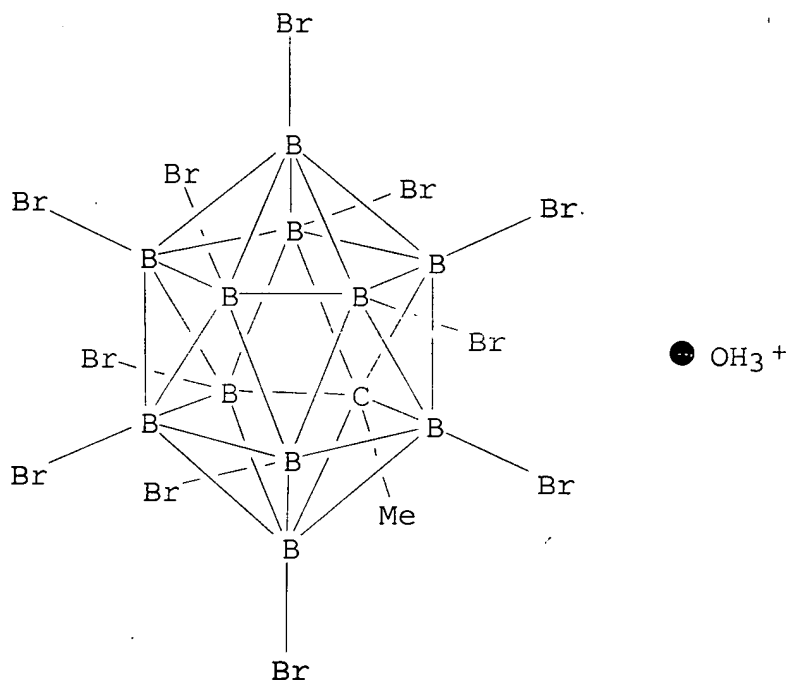
IT 503570-57-8P 503570-58-9P 503570-60-3P

503570-61-4P 503570-62-5P

(crystal structure; prepn. of solvated **superacidic**
 perhalogenated hydrogen carbadodecaborates and carbadecaborates
 by ion metathesis of silver carboranate salts)

RN 503570-57-8 HCA

CN 1-Carbadodecaborate(1-), 2,3,4,5,6,7,8,9,10,11,12-undecabromo-1-
 methyl-, oxonium (9CI) (CA INDEX NAME)



RN 503570-58-9 HCA

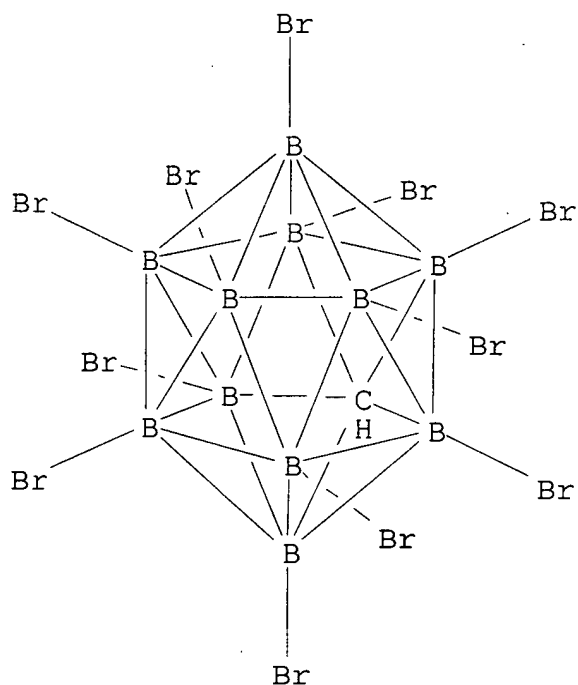
CN Hydrogen(1+), diaqua-.mu.3-oxotri-, 2,3,4,5,6,7,8,9,10,11,12-
 undecabromo-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 322477-94-1

CMF C H B11 Br11

CCI RIS

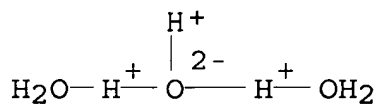


CM 2

CRN 23108-28-3

CMF H7 O3

CCI CCS



RN 503570-60-3 HCA

CN Hydrogen(1+), triaqua-.mu.3-oxotri-, 2,3,4,5,6,7,8,9,10-nonabromo-1-hydro-1-carbadecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 289673-56-9

CMF C H B9 Br9

CCI RIS

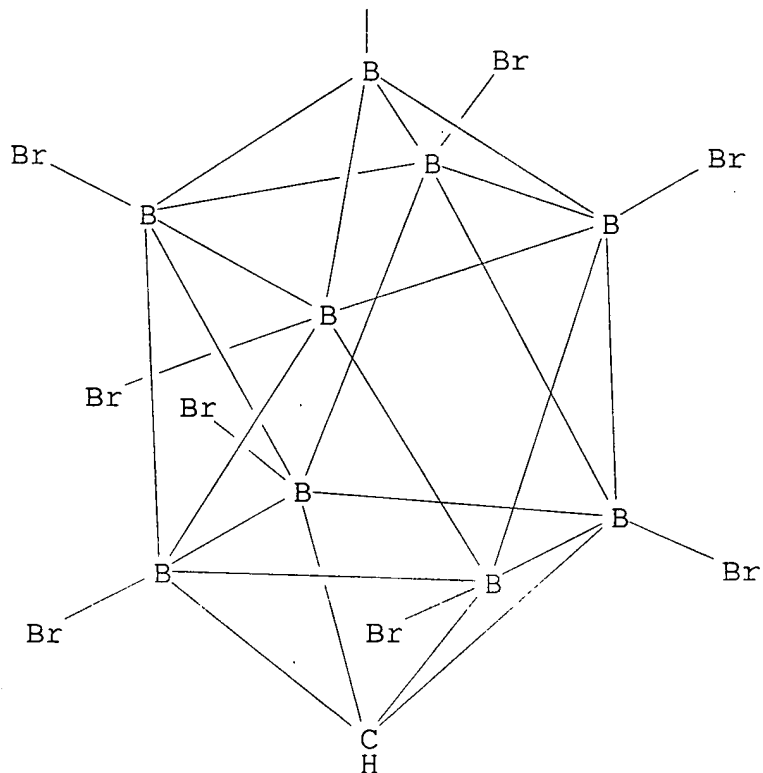
LEE 10/816,506

Page 89

PAGE 1-A

Br
|

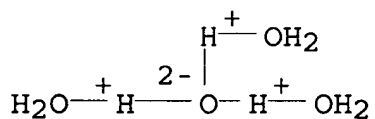
PAGE 2-A



CM 2

CRN 12501-73-4

CMF H9 O4



RN 503570-61-4 HCA

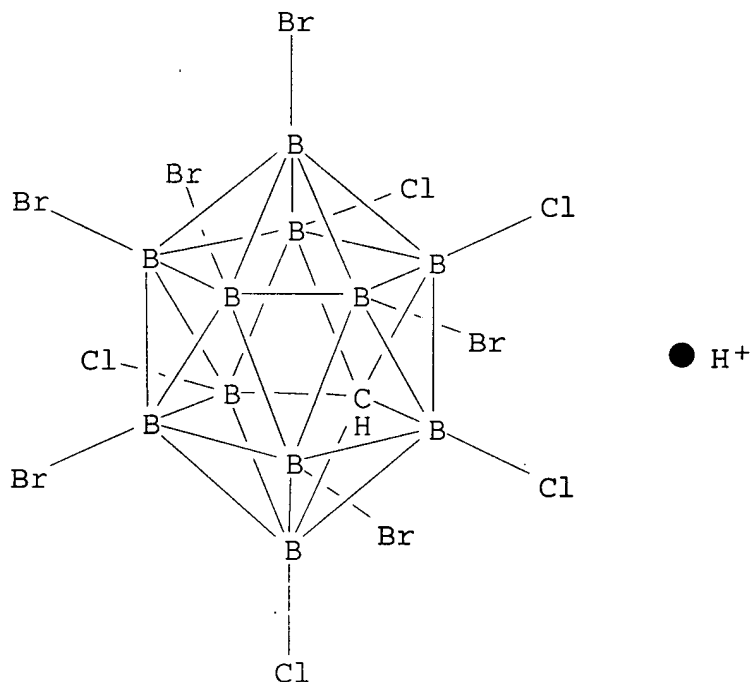
CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-2,3,4,5,6-pentachloro-, hydrogen, compd. with N,N-dimethylformamide (1:1), monohydrate (9CI) (CA INDEX NAME)

CM 1

CRN 322477-73-6

CMF C H B11 Br6 Cl5 . H

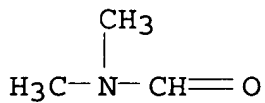
CCI RIS



CM 2

CRN 68-12-2

CMF C3 H7 N O



RN 503570-62-5 HCA

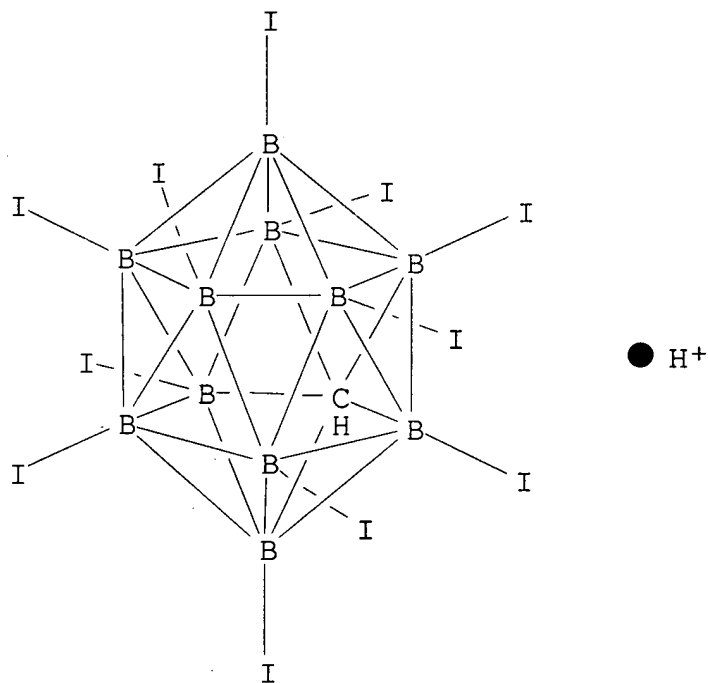
CN 1-Carbadodecaborate(1-), 1-hydro-2,3,4,5,6,7,8,9,10,11,12-undecaiodo-, hydrogen, compd. with 1,1'-oxybis[ethane] (1:1), dihydrate (9CI)
(CA INDEX NAME)

CM 1

CRN 219756-38-4

CMF C H B11 I11 . H

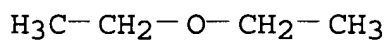
CCI RIS



CM 2

CRN 60-29-7

CMF C4 H10 O



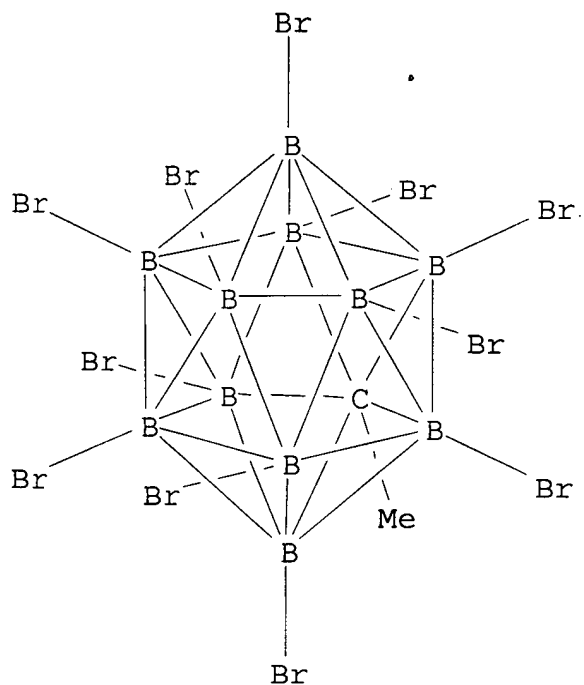
IT 219756-24-8 219756-37-3 289673-55-8

322477-81-6 322477-82-7 503570-63-6

(ion metathesis, protonation; prepn. of solvated
superacidic perhalogenated hydrogen carbadodecaborates
 and carbadecaborates by ion metathesis of silver
carboranate salts)

RN 219756-24-8 HCA

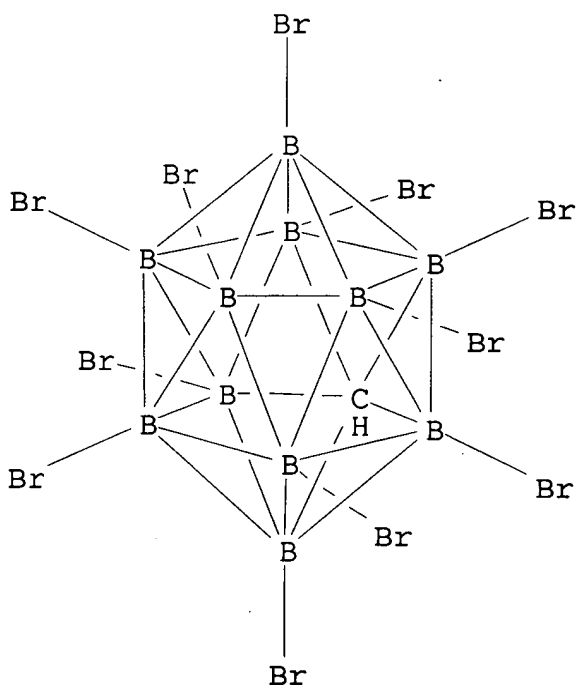
CN 1-Carbadodecaborate(1-), 2,3,4,5,6,7,8,9,10,11,12-undecabromo-1-
 methyl-, silver(1+) (9CI) (CA INDEX NAME)



● Ag(I) +

RN 219756-37-3 HCA

CN 1-Carbadodecaborate(1-), 2,3,4,5,6,7,8,9,10,11,12-undecabromo-1-hydro-, silver(1+) (9CI) (CA INDEX NAME)



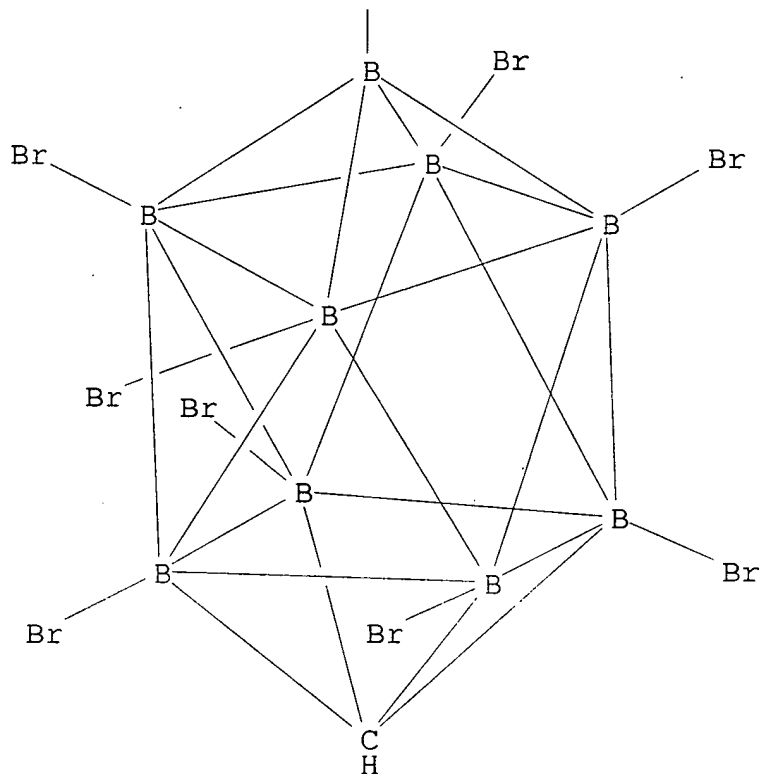
● Ag(I) +

RN 289673-55-8 HCA
CN 1-Carbadecaborate(1-), 2,3,4,5,6,7,8,9,10-nonabromo-1-hydro-,
silver(1+) (9CI) (CA INDEX NAME)

PAGE 1-A

Br
|

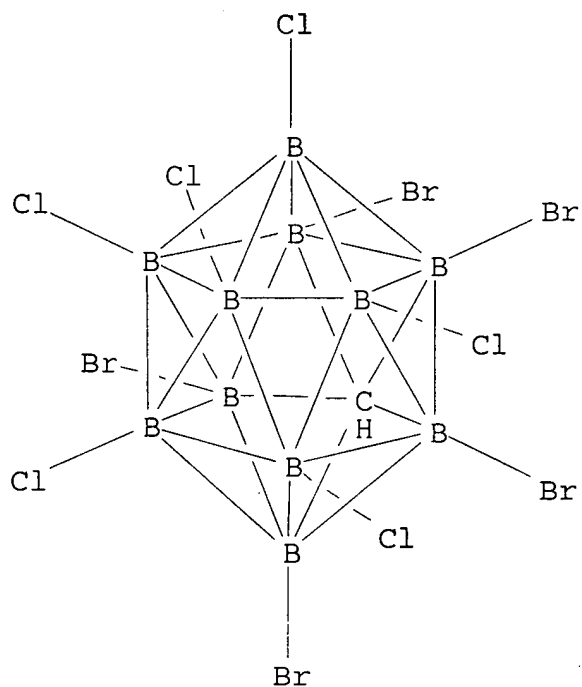
PAGE 2-A



PAGE 3-A

● Ag(I) +

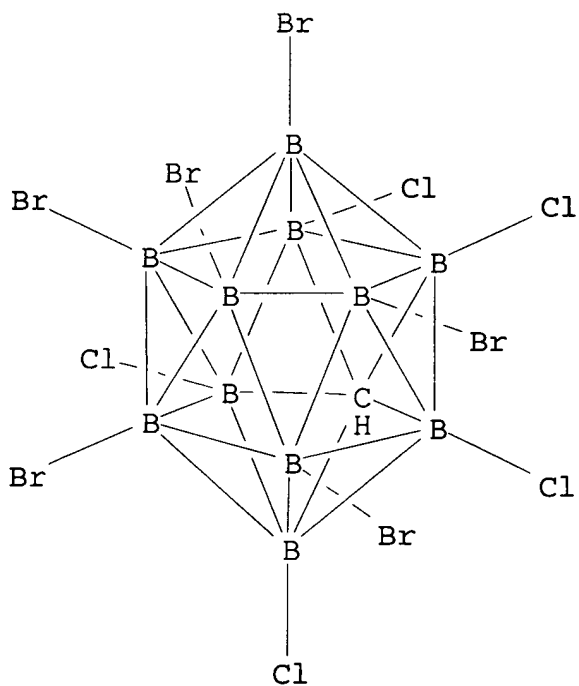
RN 322477-81-6 HCA
CN 1-Carbadodecaborate(1-), 2,3,4,5,6-pentabromo-7,8,9,10,11,12-hexachloro-1-hydro-, silver(1+) (9CI) (CA INDEX NAME)



● Ag(I) +

RN 322477-82-7 HCA

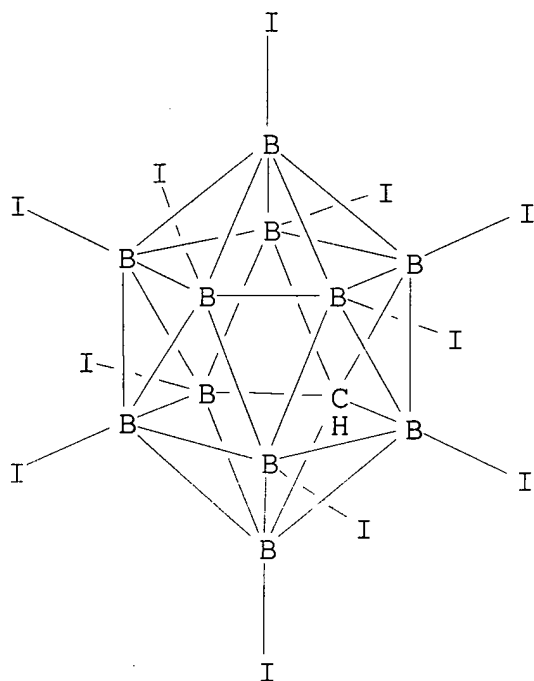
CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-2,3,4,5,6-pentachloro-1-hydro-, silver(1+) (9CI) (CA INDEX NAME)



● Ag(I) +

RN 503570-63-6 HCA

CN 1-Carbadodecaborate(1-), 1-hydro-2,3,4,5,6,7,8,9,10,11,12-undecaiodo-, silver(1+) (9CI) (CA INDEX NAME)



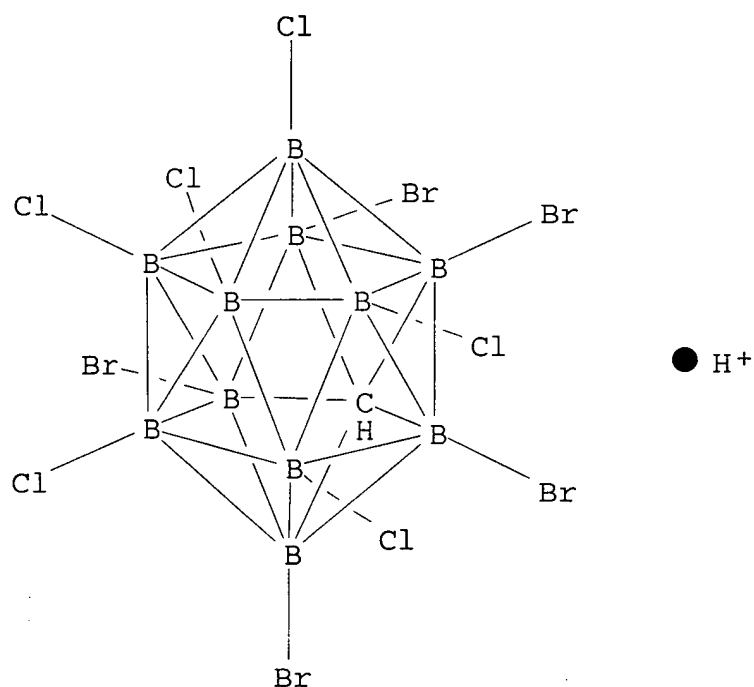
● Ag(I) +

IT 322477-71-4

(**superacid** used for protonation of cyclohexene; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)

RN 322477-71-4 HCA

CN 1-Carbadodecaborate(1-), 2,3,4,5,6-pentabromo-7,8,9,10,11,12-hexachloro-, hydrogen (9CI) (CA INDEX NAME)



- CC 29-4 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 75
- ST **carborane** halogenated silver salt metathesis solvated
proton deriv prepn; **superacid carboranate** anion
prepn protonation silver salt; carbadodecaborate carbadecaborate
hydrogen **superacid** prepn; crystal structure hydrogen
carbadodecaborate carbadecaborate perhalogen deriv **superacid**
solvate; mol structure hydrogen carbadodecaborate carbadecaborate
perhalogen deriv **superacid** solvate
- IT **Carboranes**
Superacids
(crystal structure, alkene protonation; prepn. and structure of
hydrates and solvates of **superacids** with perhalogenated
carbadodecaborate and carbadecaborate anions)
- IT Thermal decomposition
(of hydrates and solvates of perhalogenated hydrogen
carbadodecaborates and carbadecaborates to give
superacids contg. **carborane** anions)
- IT Crystal structure
Molecular structure
(of solvates of perhalogenated hydrogen carbadodecaborate and
carbadecaborate **superacids**)
- IT Solvation
(prepn. and structure of hydrates and solvates of
superacids with perhalogenated carbadodecaborate and

- carbadecaborate anions)
- IT 503570-59-0P
(crystal structure, thermal dehydration, alkene protonation; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)
- IT 503570-57-8P 503570-58-9P 503570-60-3P
503570-61-4P 503570-62-5P
(crystal structure; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)
- IT 219756-24-8 219756-37-3 289673-55-8
322477-81-6 322477-82-7 503570-63-6
(ion metathesis, protonation; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)
- IT 108-93-0P, Cyclohexanol, preparation
(prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)
- IT 110-83-8, Cyclohexene, reactions
(protonation; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)
- IT 322477-71-4
(**superacid** used for protonation of cyclohexene; prepn. of solvated **superacidic** perhalogenated hydrogen carbadodecaborates and carbadecaborates by ion metathesis of silver **carboranate** salts)

L28 ANSWER 11 OF 34 HCA COPYRIGHT 2006 ACS on STN

138:237760 Isolating Benzenium Ion Salts. Reed, Christopher A.; Kim, Kee-Chan; Stoyanov, Evgenii S.; Stasko, Daniel; Tham, Fook S.; Mueller, Leonard J.; Boyd, Peter D. W. (Department of Chemistry, University of California, Riverside, CA, 92521-0403, USA). Journal of the American Chemical Society, 125(7), 1796-1804 (English) 2003. CODEN: JACSAT. ISSN: 0002-7863. OTHER SOURCES: CASREACT 138:237760. Publisher: American Chemical Society.

AB When partnered with **carborane** anions, arenium ions are remarkably stable. Previously studied only at subambient temps. in highly **superacidic** media, protonated benzene is readily isolated as a cryst. salt, thermally stable to >150.degree.. [H(arene)][**carborane**] were prepd. by protonating benzene, toluene, m-xylene, mesitylene, and hexamethylbenzene with the **carborane superacid** H(CB11HR5X6) (R = H, Me; X = Cl, Br). They were characterized by elemental anal., x-ray crystallog., NMR and IR methods. Solid-state ¹³C NMR spectra are

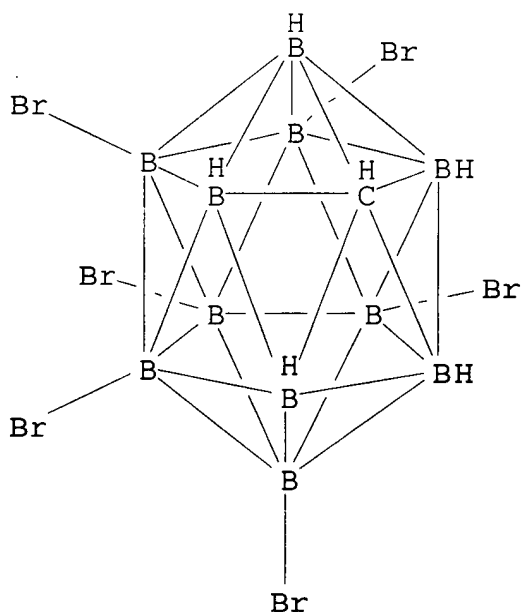
similar to those obsd. earlier in soln., indicating that lattice interactions are comparable to soln. solvation effects. The acidic proton(s) of the arenium cations interact weakly with the halide substituents of the anion via ion pairing. This is reflected in the dependence of the C-H stretching frequency on the basicity of the **carborane** anion. Bond lengths in the arenium ions are consistent with predominant cyclohexadienyl cation character, but charge distribution within the cation is less well represented by this resonance form. Structural and vibrational comparison to theory is made for the benzenium ion ($C_6H_7^+$) with d. functional theory at B3LYP/6-31G* and B3P86/6-311+G(d,p) levels. The stability of these salts elevates arenium ions from the status of transients (Wheland intermediates) to reagents. They were used to bracket the soln.-phase basicity of C_{60} between that of mesitylene and xylene.

IT 108674-23-3

(best crystg. anion and effect on carbon-hydrogen stretch in benzenium; isolating benzenium ion salts)

RN 108674-23-3 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro- (9CI) (CA INDEX NAME)



IT 235429-30-8P 501679-62-5P 501679-63-6P
501679-65-8P

(crystallog.; isolating benzenium ion salts)

RN 235429-30-8 HCA

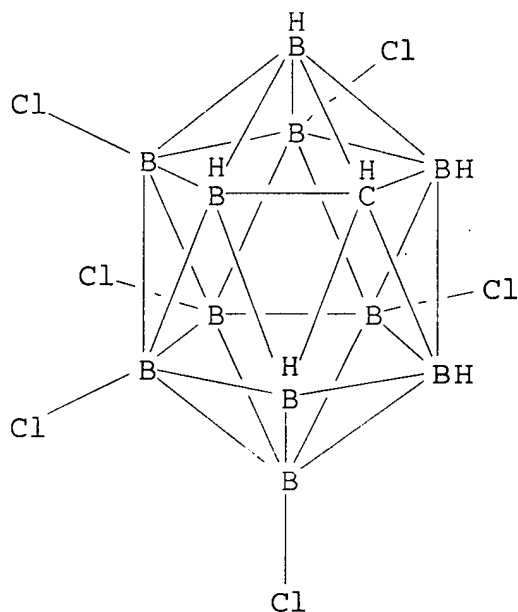
CN Cyclohexadienylum, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

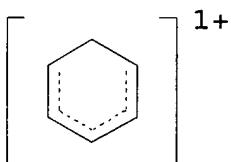
CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7



RN 501679-62-5 HCA

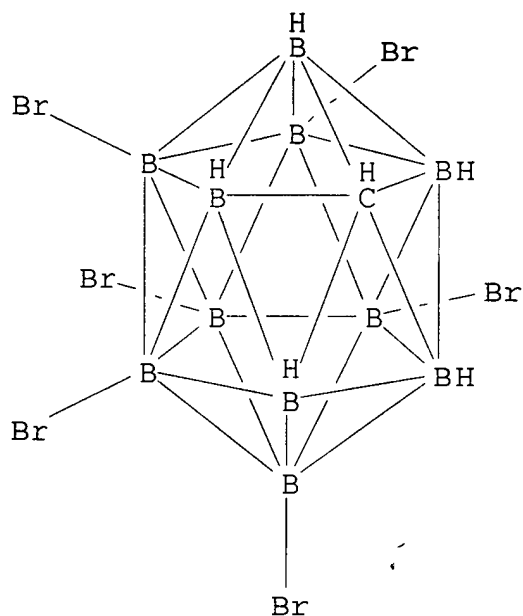
CN Cyclohexadienylum, 1,3-dimethyl-, 7,8,9,10,11,12-hexabromo-
1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3

CMF C H6 B11 Br6

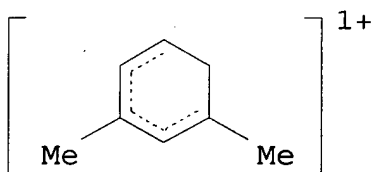
CCI RIS



CM 2

CRN 45634-07-9

CMF C8 H11



RN 501679-63-6 HCA

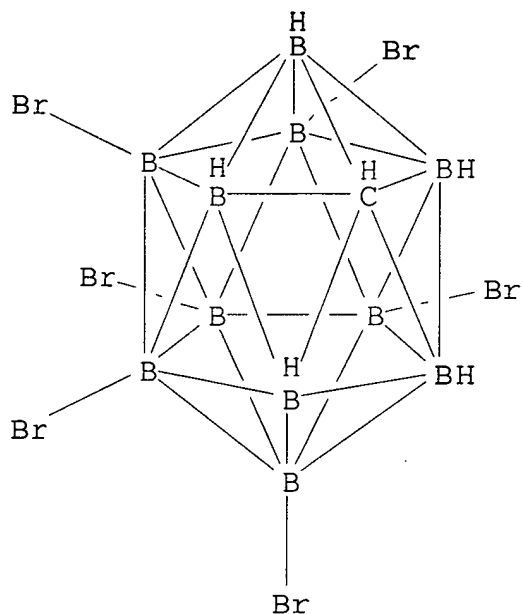
CN Cyclohexadienylum, 1,2,3,4,5,6-hexamethyl-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3

CMF C H6 B11 Br6

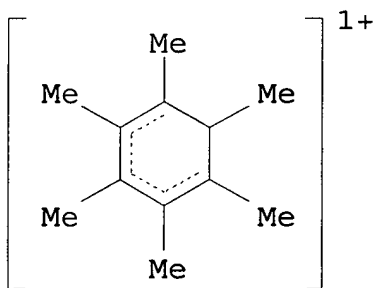
CCI RIS



CM 2

CRN 27458-89-5

CMF C12 H19



RN 501679-65-8 HCA

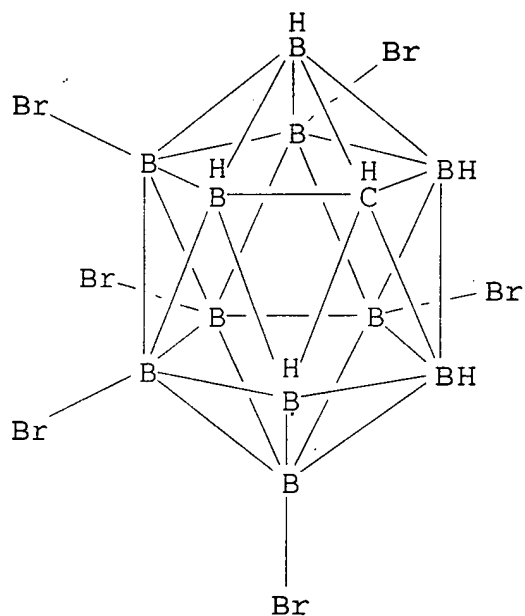
CN Cyclohexadienylum, 1,3,5-trimethyl-, 7,8,9,10,11,12-hexabromo-
1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3

CMF C H6 B11 Br6

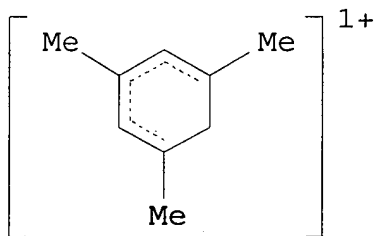
CCI RIS



CM 2

CRN 29631-18-3

CMF C9 H13



IT 501679-67-0 501679-68-1

(crystallog.; isolating benzenium ion salts)

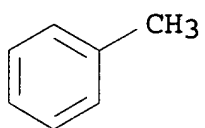
RN 501679-67-0 HCA

CN Cyclohexadienylium, methyl-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-), compd. with methylbenzene (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 108-88-3

CMF C7 H8



CM 2

CRN 501679-61-4

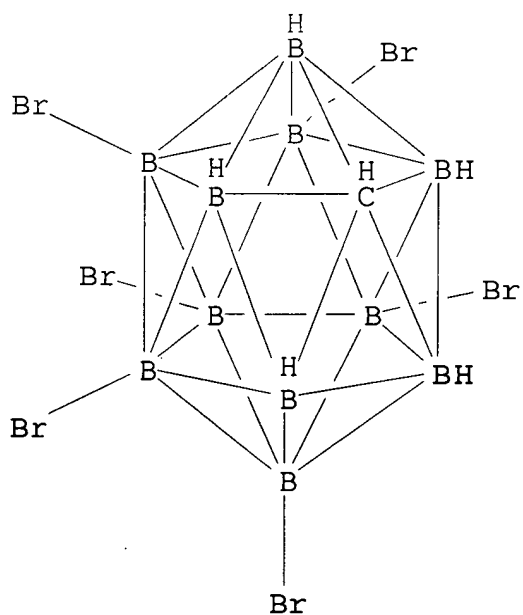
CMF C7 H9 . C H6 B11 Br6

CM 3

CRN 108674-23-3

CMF C H6 B11 Br6

CCI RIS

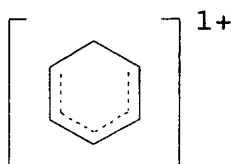


CM 4

CRN 55520-27-9

CMF C7 H9

CCI IDS

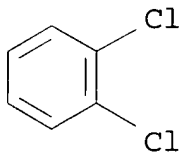


D1-Me

RN 501679-68-1 HCA
CN Cyclohexadienylum, 1,3,5-trimethyl-, 7,8,9,10,11,12-hexabromo-
1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-), compd. with
1,2-dichlorobenzene (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 95-50-1
CMF C6 H4 Cl2

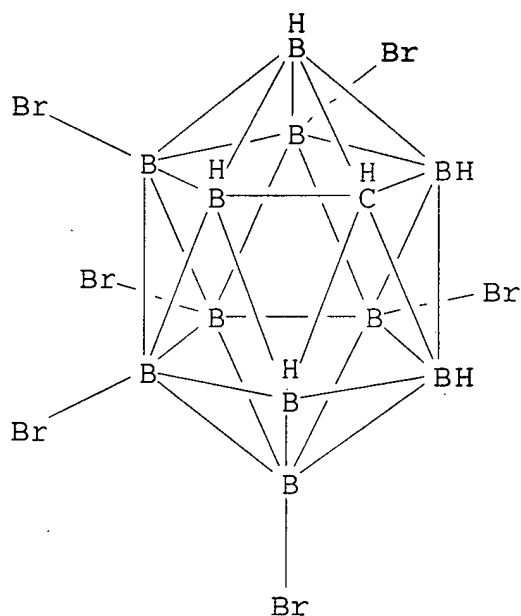


CM 2

CRN 501679-65-8
CMF C9 H13 . C H6 B11 Br6

CM 3

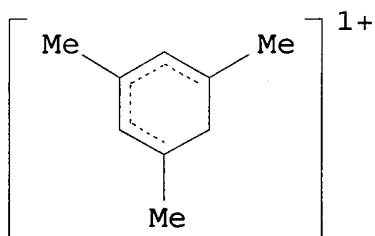
CRN 108674-23-3
CMF C H6 B11 Br6
CCI RIS



CM 4

CRN 29631-18-3

CMF C9 H13



IT 474380-06-8

(crystn. of arenium **carborane** anion salt; isolating
benzenium ion salts)

RN 474380-06-8 HCA

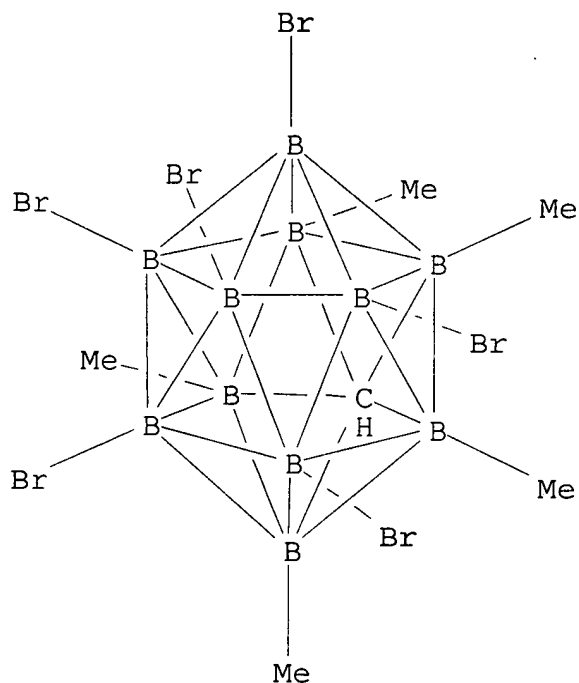
CN Silylium, triethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-
pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

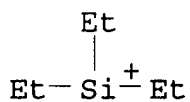
CCI RIS



CM 2

CRN 44564-80-9

CMF C6 H15 Si

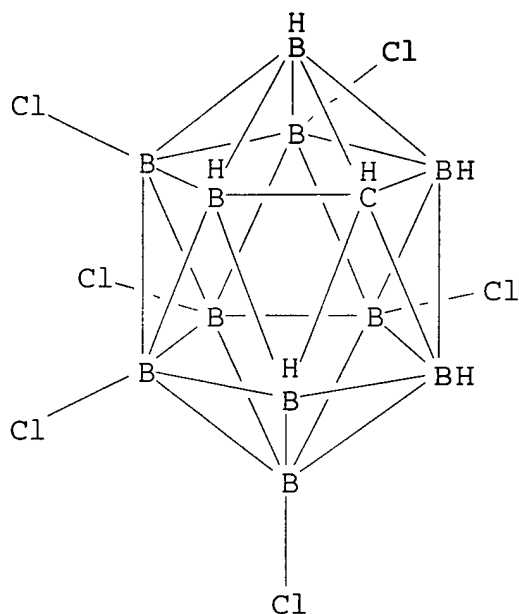


IT 108635-59-2 175476-39-8 405195-04-2

(effect on carbon-hydrogen stretch in benzenium; isolating benzenium ion salts)

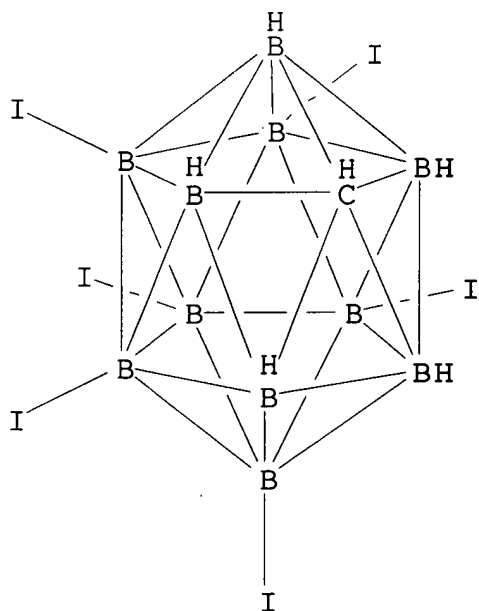
RN 108635-59-2 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro- (9CI) (CA INDEX NAME)



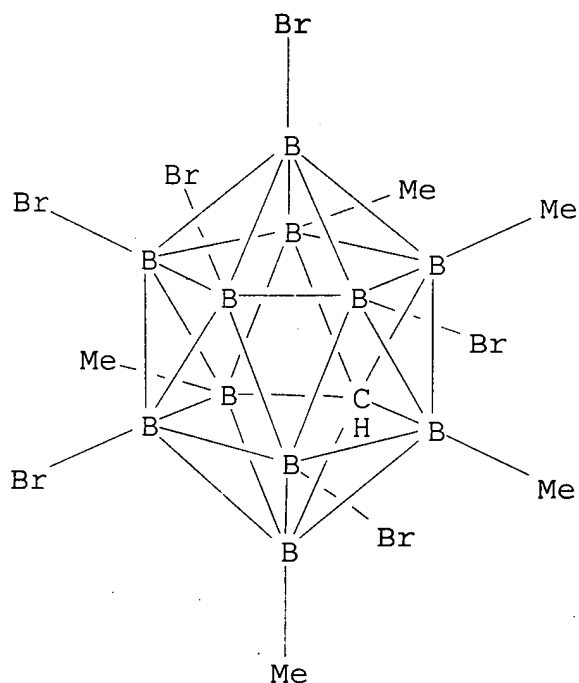
RN 175476-39-8 HCA

CN 1-Carbadodecaborate(1-), 1,2,3,4,5,6-hexahydro-7,8,9,10,11,12-hexaiodo- (9CI) (CA INDEX NAME)



RN 405195-04-2 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)



IT 405195-05-3P 501679-60-3P 501679-61-4P

501679-64-7P 501679-66-9P

(isolating benzenium ion salts)

RN 405195-05-3 HCA

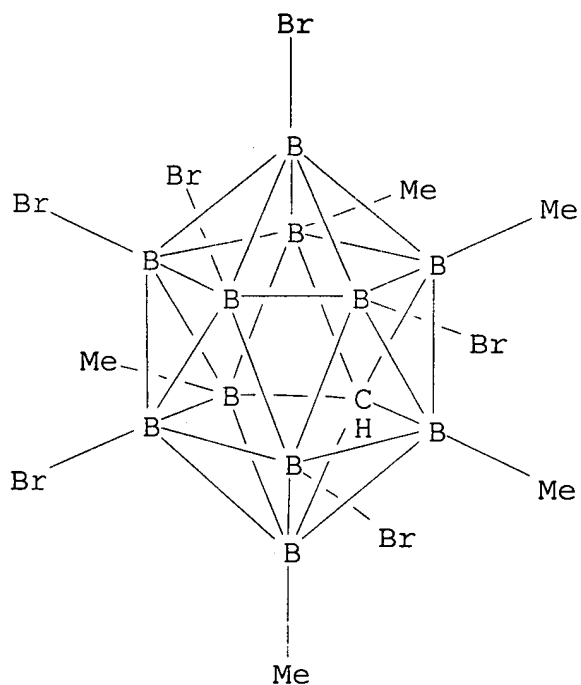
CN Cyclohexadienylum, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

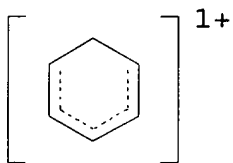
CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7



RN 501679-60-3 HCA

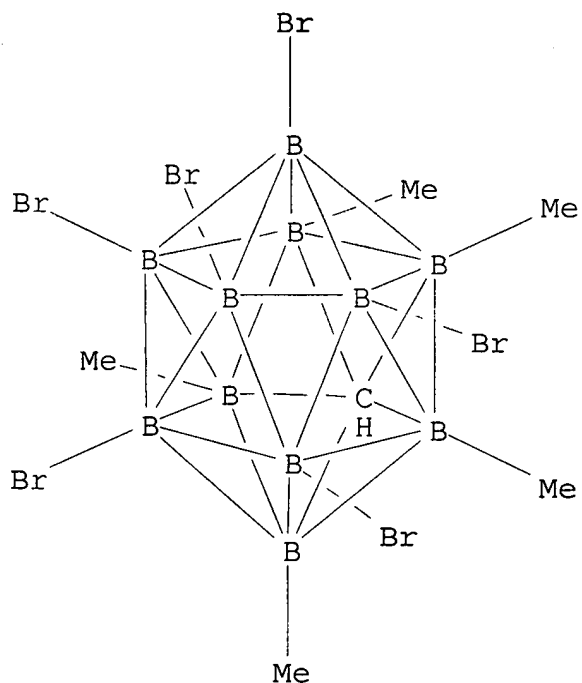
CN Cyclohexadienylium-1,2,3,4,5,6-d6, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

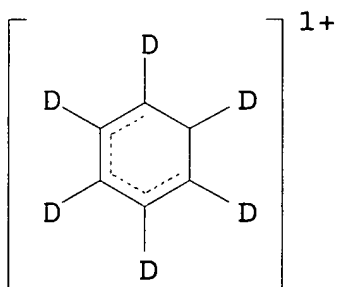
CCI RIS



CM 2

CRN 80359-03-1

CMF C6 H D6



RN 501679-61-4 HCA

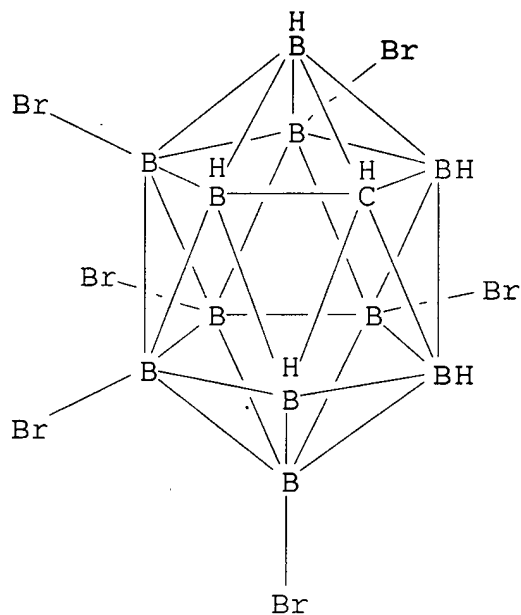
CN Cyclohexadienylum, methyl-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3

CMF C H6 B11 Br6

CCI RIS

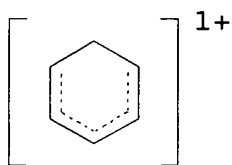


CM 2

CRN 55520-27-9

CMF C7 H9

CCI IDS



D1-Me

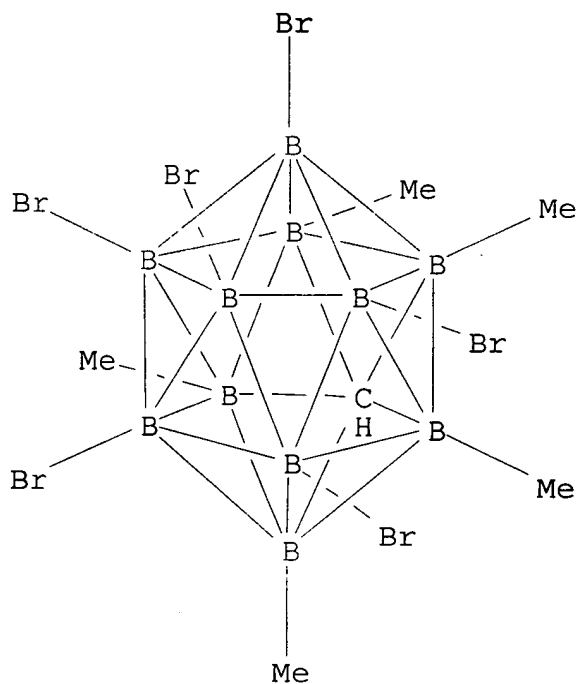
RN 501679-64-7 HCA

CN Cyclohexadienylum, 1,3,5-trimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

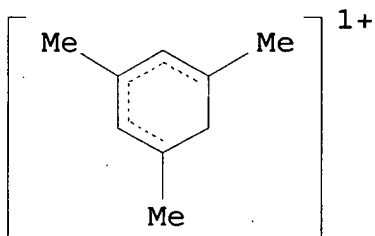
CRN 405195-04-2

CMF C6 H16 B11 Br6
CCI RIS



CM 2

CRN 29631-18-3
CMF C9 H13

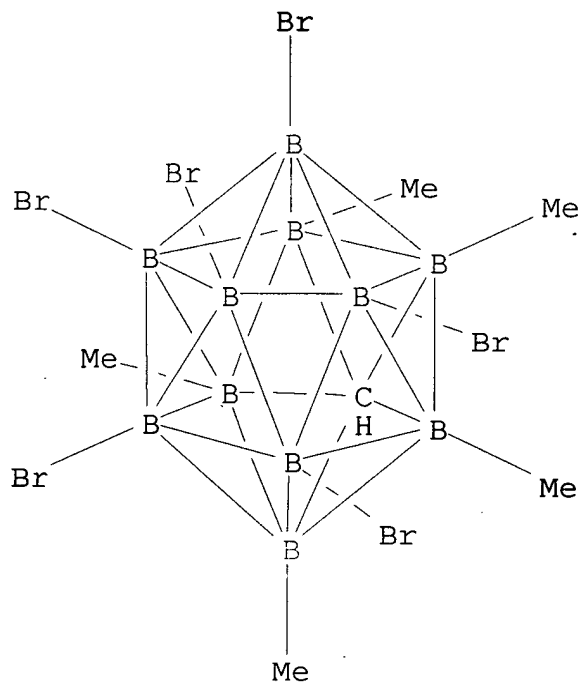


RN 501679-66-9 HCA
CN Cyclohexadienylum, 1,2,3,4,5,6-hexamethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate (1-)
(9CI) (CA INDEX NAME)

CM 1

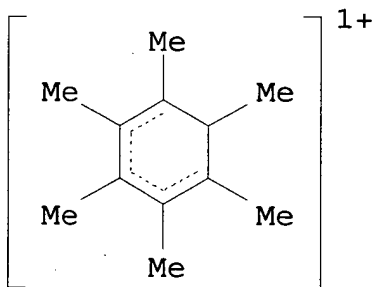
CRN 405195-04-2

CMF C6 H16 B11 Br6
CCI RIS



CM 2

CRN 27458-89-5
CMF C12 H19



IT 501679-69-2 501679-70-5 501686-68-6
501686-70-0

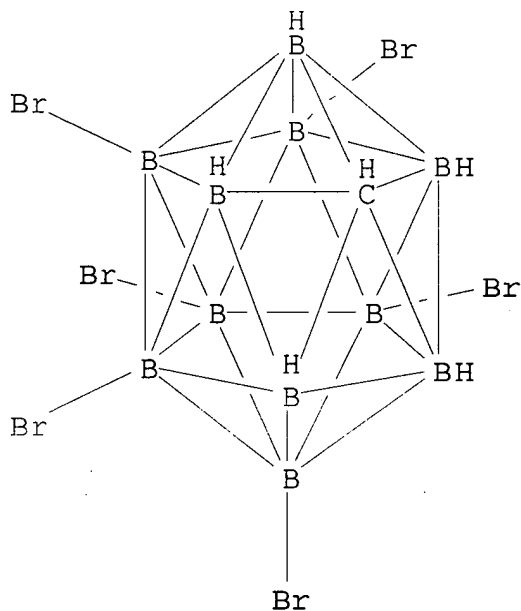
(isolating benzenium ion salts)

RN 501679-69-2 HCA

CN Cyclohexadienylium, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

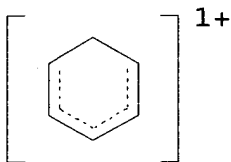
CM 1

CRN 108674-23-3
 CMF C H6 B11 Br6
 CCI RIS



CM 2

CRN 26812-57-7
 CMF C6 H7

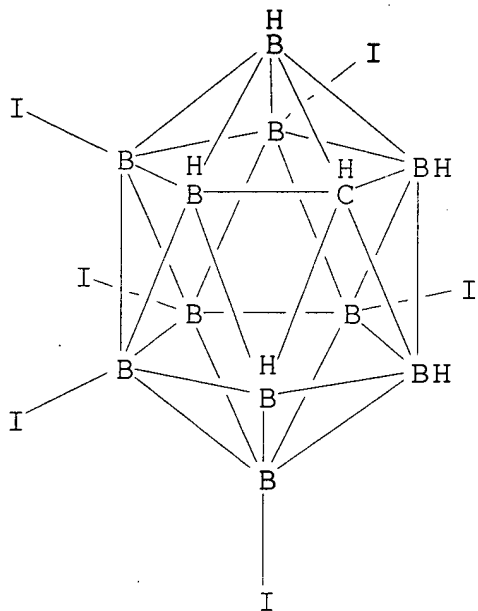


RN 501679-70-5 HCA
 CN Cyclohexadienylum, 1,2,3,4,5,6-hexahydro-7,8,9,10,11,12-hexaiodo-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 175476-39-8
 CMF C H6 B11 I6

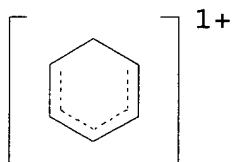
CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7



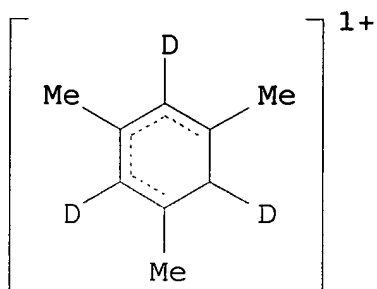
RN 501686-68-6 HCA

CN Cyclohexadienylum-2,4,6-d3, 1,3,5-trimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-)
(9CI) (CA INDEX NAME)

CM 1

CRN 501686-67-5

CMF C9 H10 D3

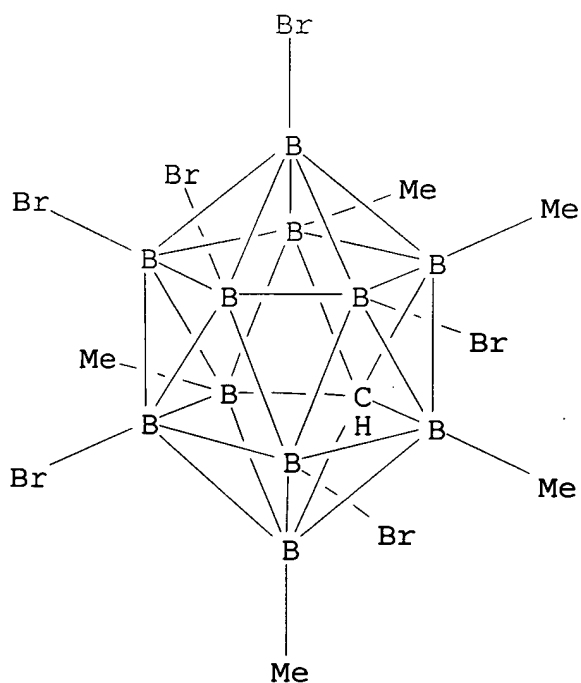


CM 2

CRN 405195-04-2

CMF C6 H16 B11 Br6

CCI RIS



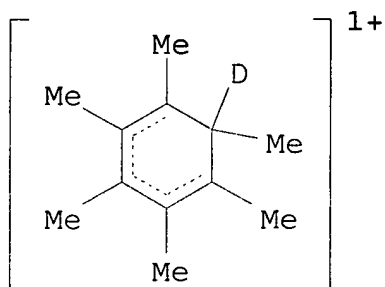
RN 501686-70-0 HCA

CN Cyclohexadienyl-6-d, 1,2,3,4,5,6-hexamethyl-,
7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-
carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 501686-69-7

CMF C12 H18 D

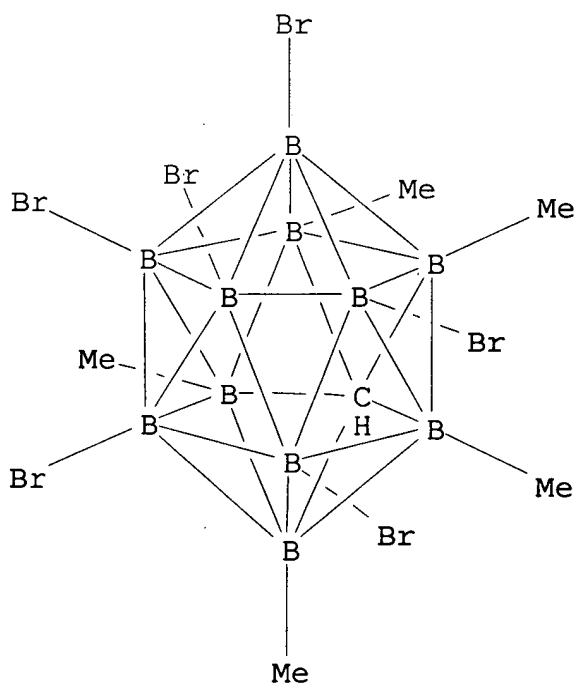


CM 2

CRN 405195-04-2

CMF C6 H16 B11 Br6

CCI RIS

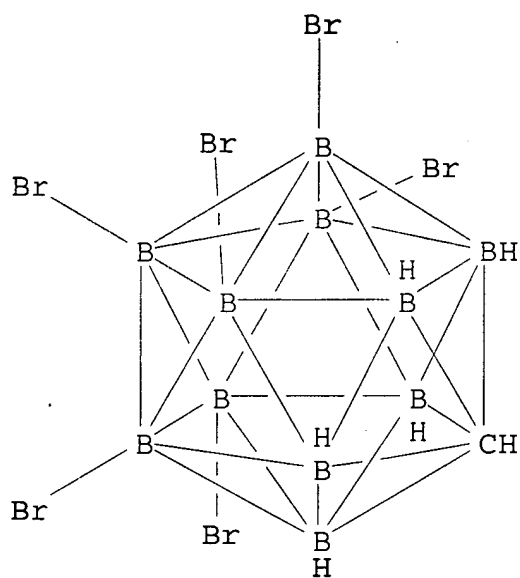


IT 160568-32-1 278796-67-1 405195-03-1

(isolating benzenium ion salts)

RN 160568-32-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)



● H⁺

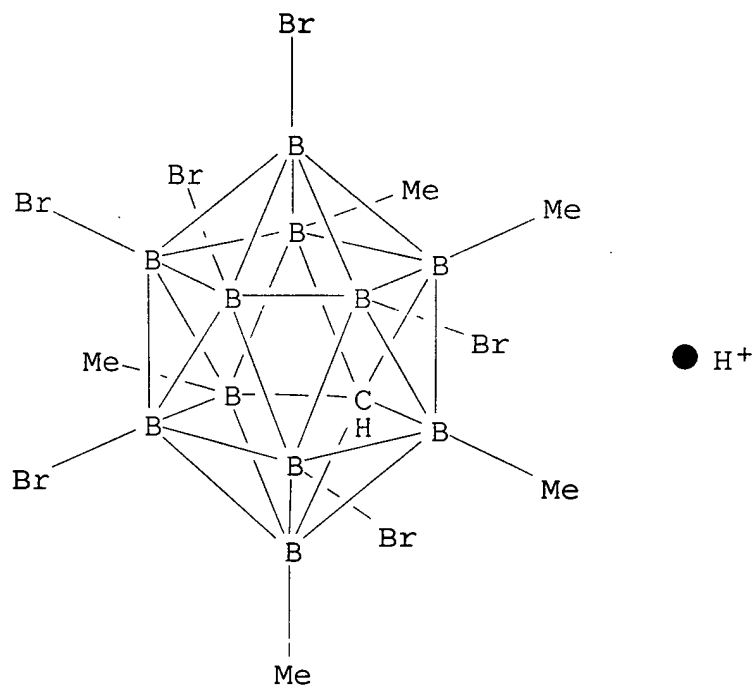
RN 278796-67-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 405195-03-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-, hydrogen (9CI) (CA INDEX NAME)



- CC 22-12 (Physical Organic Chemistry)
Section cross-reference(s): 29, 75
- IT Dehydration reaction
(agents, arenium **carborane** salts as; isolating benzenium ion salts)
- IT Basicity
(arenium carbon-hydrogen stretch IR vs. **carborane** anion; isolating benzenium ion salts)
- IT MAS NMR spectroscopy
(carbon-13, CP, **carborane** salts; isolating benzenium ion salts)
- IT NMR (nuclear magnetic resonance)
(carbon-13, **carborane** salts; isolating benzenium ion salts)
- IT Molecular structure
(**carborane** salts crystallog.; isolating benzenium ion salts)
- IT Molecular structure
(**carborane** salts optimized; isolating benzenium ion salts)
- IT Hydrogen bond
(**carborane** salts weak; isolating benzenium ion salts)
- IT NMR (nuclear magnetic resonance)
(**carborane** salts 1H; isolating benzenium ion salts)
- IT Crystal structure

- (carborane salts; isolating benzenium ion salts)
- IT **Superacids**
(carborane; isolating benzenium ion salts)
- IT **Carboranes**
(crystallog. of salts contg. anionic; isolating benzenium ion salts)
- IT **Anions**
(crystallog. of salts contg. carborane; isolating benzenium ion salts)
- IT **Electron donors**
(halocarborane anions as; isolating benzenium ion salts)
- IT 108674-23-3
(best crystg. anion and effect on carbon-hydrogen stretch in benzenium; isolating benzenium ion salts)
- IT 235429-30-8P 501679-62-5P 501679-63-6P 501679-65-8P
(crystallog.; isolating benzenium ion salts)
- IT 501679-67-0 501679-68-1
(crystallog.; isolating benzenium ion salts).
- IT 474380-06-8
(crystn. of arenium carborane anion salt; isolating benzenium ion salts)
- IT 108635-59-2 175476-39-8 405195-04-2
(effect on carbon-hydrogen stretch in benzenium; isolating benzenium ion salts)
- IT 405195-05-3P 501679-60-3P 501679-61-4P 501679-64-7P 501679-66-9P
(isolating benzenium ion salts)
- IT 55520-27-9D, surface bound on aluminum tribromide -hydrogen bromide
91308-99-5D, surface bound on aluminum tribromide -hydrogen bromide
501679-69-2 501679-70-5 501679-73-8
501686-68-6 501686-70-0
(isolating benzenium ion salts)
- IT 71-43-2, Benzene, reactions 87-85-4, Hexamethylbenzene 108-38-3,
m-Xylene, reactions 108-67-8, Mesitylene, reactions 108-88-3,
Toluene, reactions 160568-32-1 278796-67-1
405195-03-1
(isolating benzenium ion salts)

L28 ANSWER 12 OF 34 HCA COPYRIGHT 2006 ACS on STN

137:325482 New Perfluoroarylborane Activators for Single-Site Olefin Polymerization. Acidity and Cocatalytic Properties of a "Superacidic" Perfluorodiboranthracene. Metz, Matthew V.; Schwartz, David J.; Stern, Charlotte L.; Marks, Tobin J.; Nickias, Peter N. (Department of Chemistry, Northwestern University, Evanston, IL, 60208, USA). Organometallics, 21(20), 4159-4168 (English) 2002. CODEN: ORGND7. ISSN: 0276-7333. OTHER SOURCES:

CASREACT 137:325482. Publisher: American Chemical Society.

AB The **synthesis**, Lewis acid properties, and single-site olefin polymn. characteristics of catalyst systems utilizing the binuclear organo-Lewis acid cocatalyst 9,10-bis(pentafluorophenyl)-9,10-diboraoctafluoroanthracene, C12F8B2(C6F5)2 (8b), are reported. X-ray diffraction anal. of 8b reveals a nearly planar C12F8B2 core with -C6F5 rings rotated 75.degree. out of the plane, hindering .pi. communication between the pendant -C6F5 substituents and the C12F8B2 core, and thereby enhancing Lewis acidity at the boron centers. Competition equilibration expts. with 8b, B(C6F5)3, and acetonitrile over a wide temp. range demonstrate that 8b is a stronger Lewis acid than B(C6F5)3 by .DELTA.H = +1.4(2) kcal/mol and .DELTA.S = -5.3(1) eu. The diffraction-derived mol. structure of 8b.rarw.NCCH3 reveals substantial skeletal reorganization only at the coordinated boron center. When it is paired with di-Me organo-group 4 catalyst precursors, 8b affords extremely efficient single-site olefin polymn. systems in both lab. and large-scale reactors. In all cases, 8b forms polymn. systems with higher activities than those utilizing B(C6F5)3 as the cocatalyst.

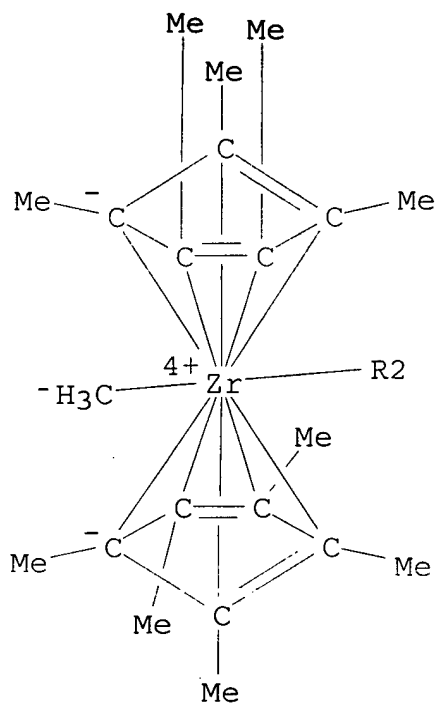
IT 473712-80-0 473712-83-3

(Contg. Cp2-Me+ moiety proximate to B-Me- center.; olefin polymn. activity comparison with **Superacidic** perfluorodiboraanthracene complex)

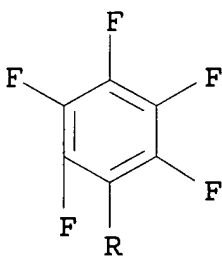
RN 473712-80-0 HCA

CN Zirconium, .mu.-methylmethyl[(pentafluorophenyl)[(pentafluorophenyl)borylene]bis[.mu.-(3,4,5,6-tetrafluoro-2,1-phenylene)]boron]bis[(1,2,3,4,5-.eta.)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, stereoisomer (9CI) (CA INDEX NAME)

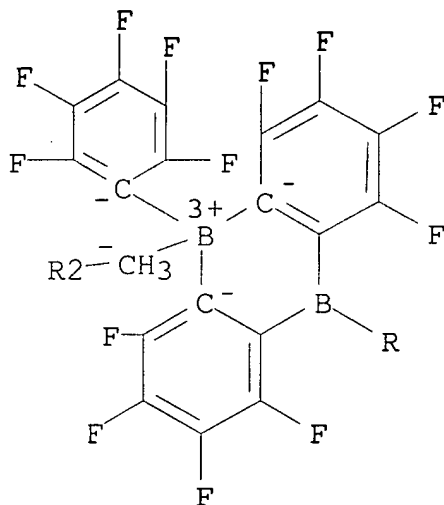
PAGE 1-A



PAGE 2-A

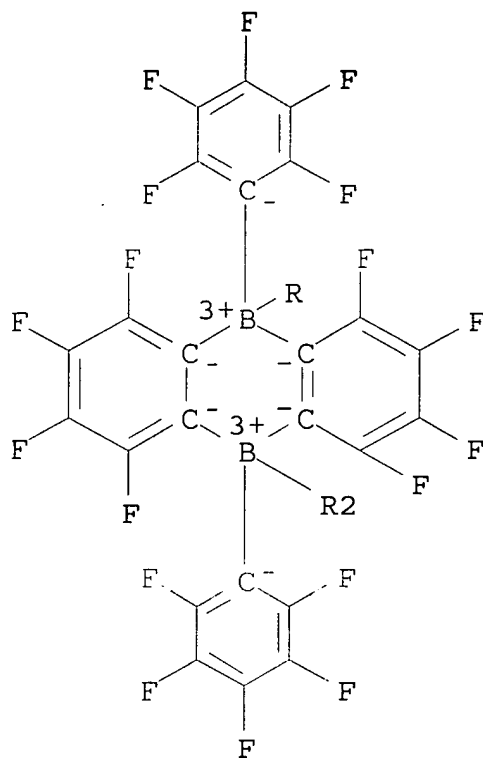


PAGE 3-A

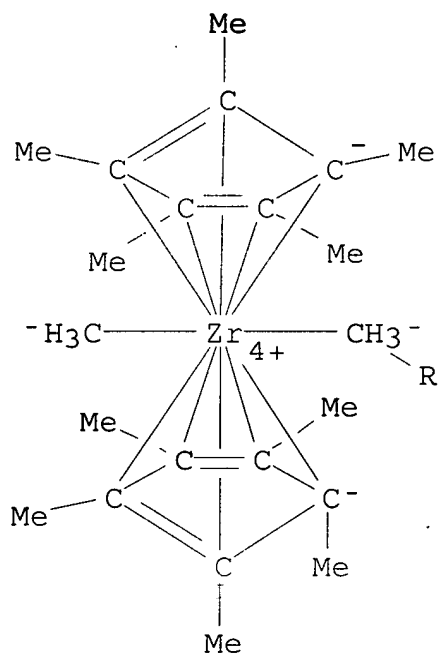


RN 473712-83-3 HCA
 CN Zirconium, [bis(pentafluorophenyl)bis[.mu.-(3,4,5,6-tetrafluoro-1,2-phenylene)]diboron]di-.mu.-methyldimethyltetrakis[(1,2,3,4,5-.eta.)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, stereoisomer (9CI) (CA INDEX NAME)

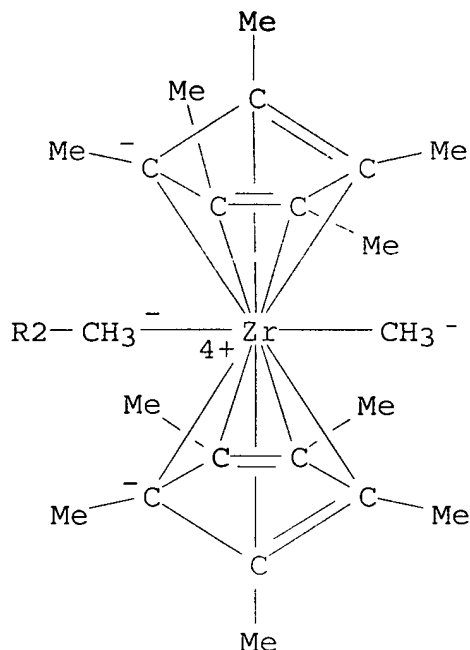
PAGE 1-A



PAGE 2-A



PAGE 3-A



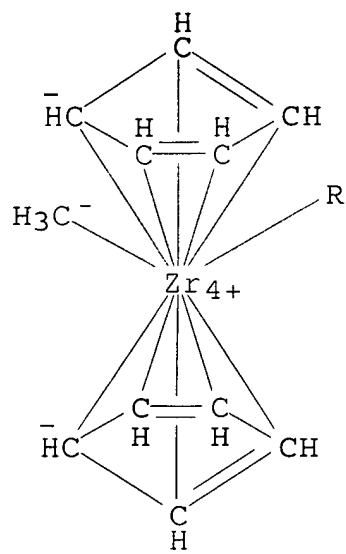
IT 473712-77-5P

(contg. Cp₂-Me⁺ moiety proximate to B-Me⁻ center.; prepn. and activators for single-site olefin polymn., acidity, and cocatalytic properties of **Superacidic** perfluorodiboraanthracene)

RN 473712-77-5 HCA

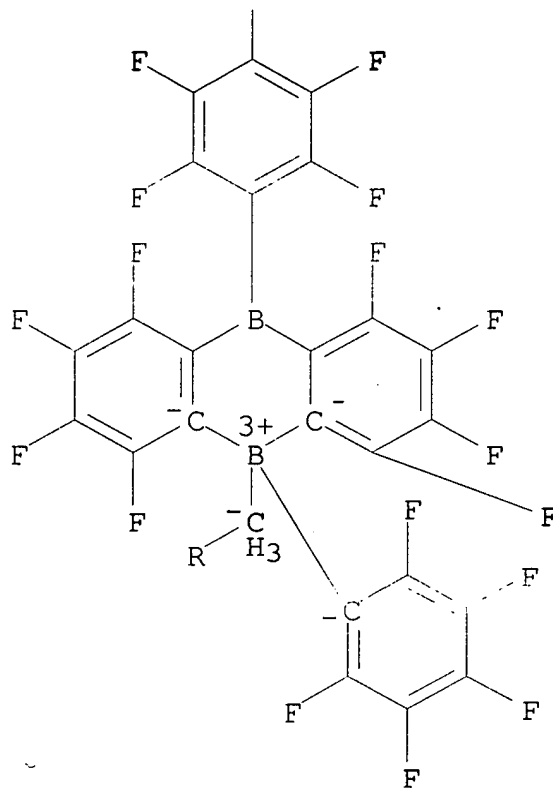
CN Zirconium, bis(.eta.⁵-2,4-cyclopentadien-1-yl)-.mu.-methylmethyl[(pentafluorophenyl)[[(pentafluorophenyl)borylene]bis(3,4,5,6-tetrafluoro-2,1-phenylene)]boron]-, stereoisomer (9CI) (CA INDEX NAME)

PAGE 1-A



F

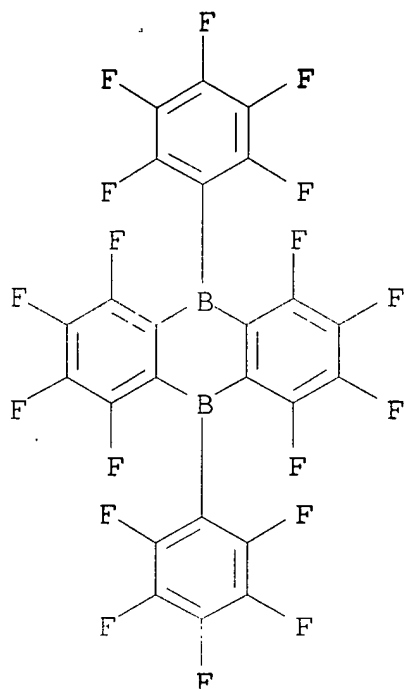
PAGE 2-A



IT 220503-31-1P
(crystal structure; prepn. and activators for single-site olefin
polymn., acidity, and cocatalytic properties of
Superacidic perfluorodiboranthracene)

RN 220503-31-1 HCA

CN Boranthrene, 1,2,3,4,6,7,8,9-octafluoro-5,10-dihydro-5,10-
bis(pentafluorophenyl)- (9CI) (CA INDEX NAME)



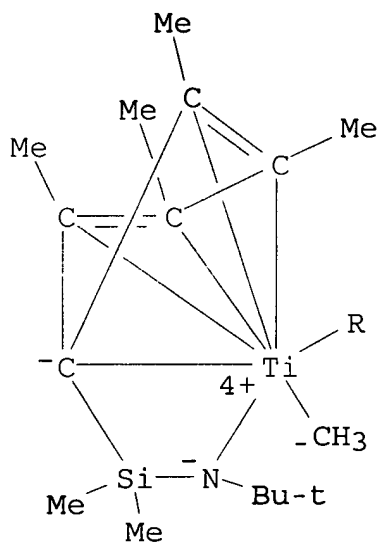
IT 473712-86-6

(olefin polymn. activity comparison with **Superacidic**
perfluorodiboranthracene complex)

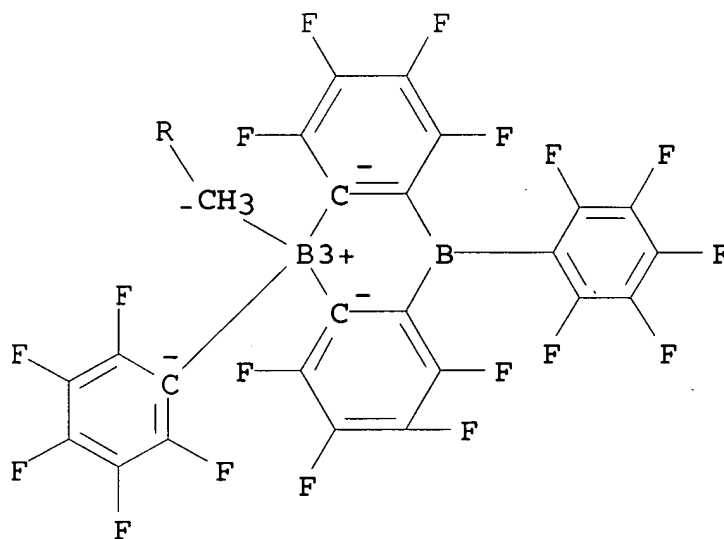
RN 473712-86-6 HCA

CN Titanium, [N-(1,1-dimethylethyl)-1,1-dimethyl-1-[(1,2,3,4,5-.eta.)-
2,3,4,5-tetramethyl-2,4-cyclopentadien-1-yl]silanaminato(2-)-
.kappa.N]-.mu.-methylmethyl[(pentafluorophenyl)[(pentafluorophenyl)
borylene]bis(3,4,5,6-tetrafluoro-2,1-phenylene)]boron]- (9CI) (CA
INDEX NAME)

PAGE 1-A



PAGE 2-A



IT 473712-78-6P

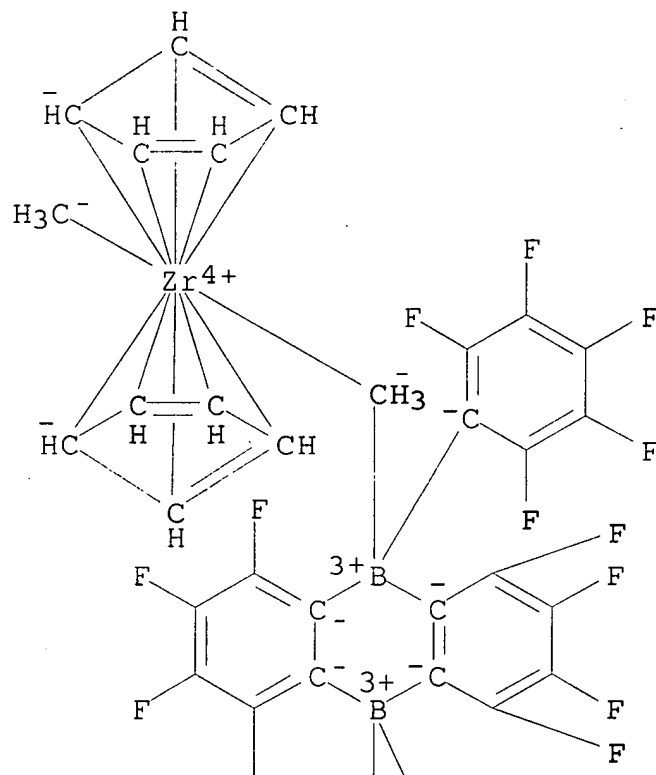
(prepn. and activators for single-site olefin polymn., acidity,
and cocatalytic properties of **Superacidic**
perfluorodiboranthracene)

RN 473712-78-6 HCA

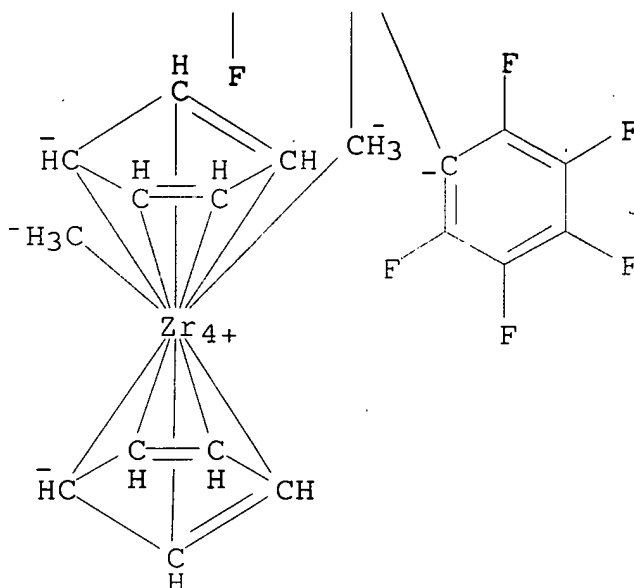
CN Zirconium, [bis(pentafluorophenyl)bis[.mu.-(3,4,5,6-tetrafluoro-1,2-

phenylene)]diboron]tetrakis(.eta.5-2,4-cyclopentadien-1-yl)di-.mu.-
methyldimethyldi-, stereoisomer (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



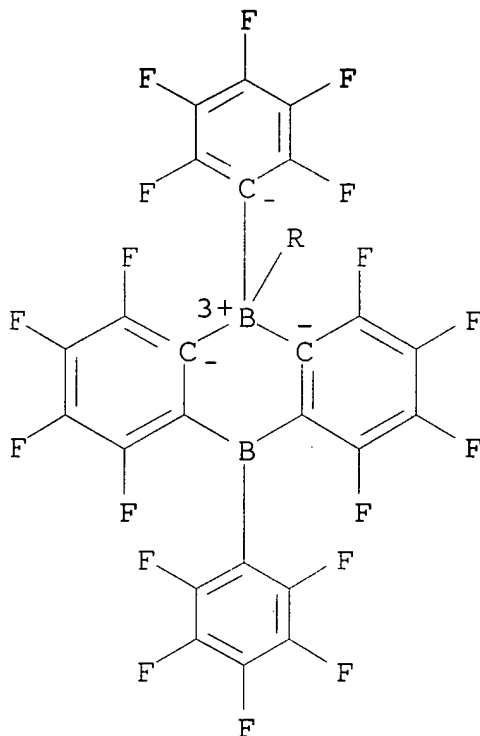
IT 473712-76-4P

(prepn. and crystal structure of)

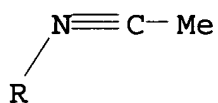
RN 473712-76-4 HCA

CN Boron, (acetonitrile) (pentafluorophenyl) [(pentafluorophenyl)borylene]bis(3,4,5,6-tetrafluoro-2,1-phenylene)-, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

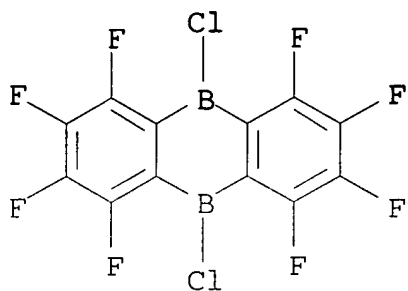


IT 220503-32-2P

(prepn. and pentafluorophenylation with tin compd.)

RN 220503-32-2 HCA

CN Boranthrene, 5,10-dichloro-1,2,3,4,6,7,8,9-octafluoro-5,10-dihydro-
(9CI) (CA INDEX NAME)



- CC 29-10 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 22, 35, 75
- ST perfluorodiboranthracene prepn crystal mol structure activator
 olefin polymn; acidity cocatalysis **superacidic**
 perfluorodiboranthracene olefin polymn; equilibration
 perfluorodiboranthracene acetonitrile perfluorophenylborane
- IT Polymerization catalysts
 (prepn. and activators for single-site olefin polymn., acidity,
 and cocatalytic properties of **Superacidic**
 perfluorodiboranthracene)
- IT Acidity
 (superacidity; prepn. and activators for
 single-site olefin polymn., acidity, and cocatalytic properties
 of **Superacidic** perfluorodiboranthracene)
- IT 473712-80-0 473712-83-3
 (Contg. Cp₂-Me⁺ moiety proximate to B-Me- center.; olefin polymn.
 activity comparison with **Superacidic**
 perfluorodiboranthracene complex)
- IT 473712-77-5P
 (contg. Cp₂-Me⁺ moiety proximate to B-Me- center.; prepn. and
 activators for single-site olefin polymn., acidity, and
 cocatalytic properties of **Superacidic**
 perfluorodiboranthracene)
- IT 220503-31-1P
 (crystal structure; prepn. and activators for single-site olefin
 polymn., acidity, and cocatalytic properties of
Superacidic perfluorodiboranthracene)
- IT 193149-39-2 473712-86-6
 (olefin polymn. activity comparison with **Superacidic**
 perfluorodiboranthracene complex)
- IT 473712-78-6P
 (prepn. and activators for single-site olefin polymn., acidity,
 and cocatalytic properties of **Superacidic**
 perfluorodiboranthracene)
- IT 74-85-1, Ethylene, reactions 111-66-0, 1-Octene 115-07-1,
 Propylene, reactions

(prepn. and activators for single-site olefin polymn., acidity, and cocatalytic properties of **Superacidic** perfluorodiboranthracene)

IT **473712-76-4P**

(prepn. and crystal structure of)

IT **220503-32-2P**

(prepn. and pentafluorophenylation with tin compd.)

L28 ANSWER 13 OF 34 HCA COPYRIGHT 2006 ACS on STN

136:332792 IR laser heat mode type negative working **lithographic** printing plate master. Shimada, Kazuto; Nakamura, Ippei; Sorori, Tadahiro (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002116539 A2 20020419, 25 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-310808 20001011.

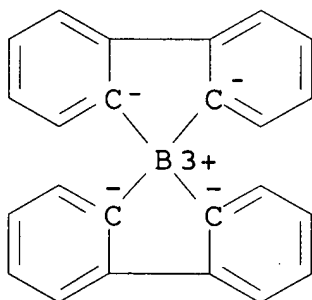
AB The title heat mode type neg. working **lithog.** printing plate master contains (A) an onium type polymn. initiator, (B) a photothermal conversion compd., (C) a polymerizable compd., and (D) a borate compd. represented by $\text{Ar}_4\text{B-M}^+$ (M^+ = cation; Ar = arom.) in a photosensitive layer. The printing plate master shows excellent sensitivity and storage stability.

IT **108479-75-0**

(borate compd. in photosensitive layer of IR laser heat mode type neg. working **lithog.** printing plate master to improve sensitivity as well as storage stability)

RN 108479-75-0 HCA

CN Borate(1-), bis([1,1'-biphenyl]-2,2'-diyl)-, lithium, (T-4)- (9CI)
(CA INDEX NAME)



● Li⁺

IC ICM G03F007-029

ICS B41N001-14; G03F007-00; G03F007-004; G03F007-027

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST IR laser heat mode neg working lithog printing plate
IT **Lithographic plates**
(IR laser heat mode type neg. working lithog. printing plate master)
IT **Photoimaging materials**
(photopolymerizable; IR laser heat mode type neg. working lithog. printing plate master)
IT 143-66-8 15522-59-5 15525-15-2 26985-34-2 108479-75-0
144699-38-7 146761-08-2 153347-65-0 159123-85-0 412267-88-0
412267-90-4 412267-92-6 412267-93-7 412267-95-9 412267-96-0
(borate compd. in photosensitive layer of IR laser heat mode type neg. working lithog. printing plate master to improve sensitivity as well as storage stability)
IT 134127-48-3 173783-73-8 244606-76-6
(photothermal conversion compd. in photosensitive layer of IR laser heat mode type neg. working lithog. printing plate master to improve sensitivity as well as storage stability)
IT 4986-89-4, Pentaerythritol tetraacrylate 139385-71-0, Glycerin dimethacrylate-hexamethylene diisocyanate copolymer
(polymerizable compd. in photosensitive layer of IR laser heat mode type neg. working lithog. printing plate master to improve sensitivity as well as storage stability)
IT 19600-49-8 25183-63-5 57835-99-1 66003-76-7 66003-78-9
398141-25-8 412043-42-6 412043-43-7
(polymn. initiator in photosensitive layer of IR laser heat mode type neg. working lithog. printing plate master to improve sensitivity as well as storage stability)

L28 ANSWER 14 OF 34 HCA COPYRIGHT 2006 ACS on STN

136:279734 Studies of Weakly Coordinating Anions Paired with Iodonium Cations. Ren, Kangtai; Malpert, John H.; Li, Huiying; Gu, Haiyan; Neckers, Douglas C. (Center for Photochemical Sciences, Bowling Green State University, Bowling Green, OH, 43402, USA). *Macromolecules*, 35(5), 1632-1637 (English) 2002. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Several new iodonium salts contg. weakly coordinating anions were synthesized and characterized. Upon UV irradiation, the rates of **photoacid** generation in acetonitrile and their preliminary activity in the photopolymerization of epoxy silicones were compared. Studies showed these salts to be excellent **photoacid** generators. The anions [(C6F5)3B-C3H3N2-B(C6F5)3]-, B(C6F5)4-, and Ga(C6F5)4- were more active and the compds. made from them more sol. in most solvents. The [(C6F5)3B-C6F4-B(C6F5)3]2- anion was less active, and the compds. made from them were less sol. than compds. made from the three aforementioned anions. Compds. contg. **hexabromocarborane** anion were quite similar to compds. contg. SbF6- in both photoactivity and soly.

IT 406170-23-8P

(synthesis of salts of weakly coordinating anions paired with
iodonium cations and their activity in cationic polymn. of epoxy
resins)

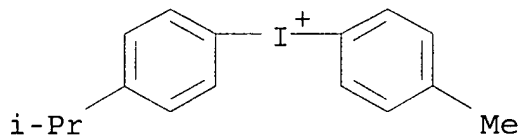
RN 406170-23-8 HCA

CN Iodonium, [4-(1-methylethyl)phenyl](4-methylphenyl)-,
7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-
) (9CI) (CA INDEX NAME)

CM 1

CRN 178233-71-1

CMF C16 H18 I

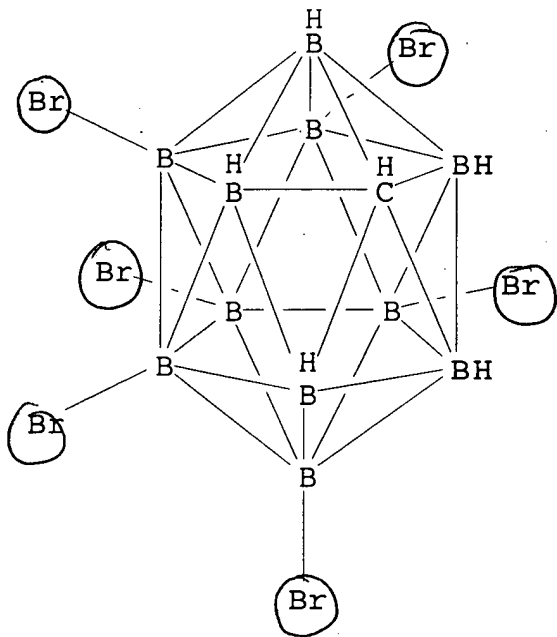


CM 2

CRN 108674-23-3

CMF C H6 B11 Br6

CCI RIS



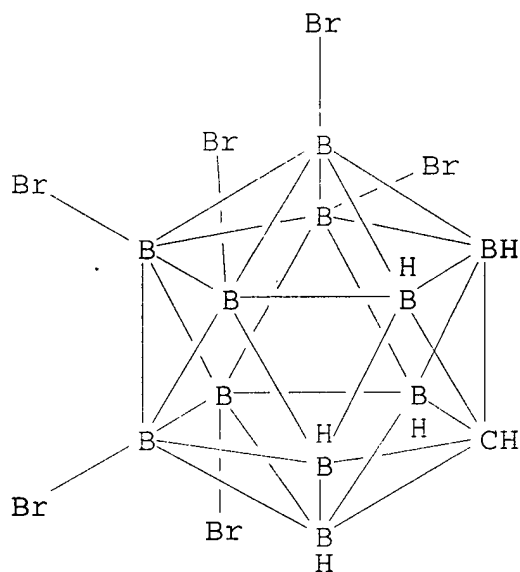
IT 121919-80-0

(synthesis of salts of weakly coordinating anions paired with

iodonium cations and their activity in cationic polymn. of epoxy resins)

RN 121919-80-0 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, silver(1+) (9CI) (CA INDEX NAME)



● Ag(I) +

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37

IT 239805-28-8P 302920-45-2P 406170-22-7P **406170-23-8P**
406676-44-6P

(synthesis of salts of weakly coordinating anions paired with iodonium cations and their activity in cationic polymn. of epoxy resins)

IT 109-72-8, Butyllithium, reactions 288-32-4, Imidazole, reactions
344-03-6, 1,4-Dibromotetrafluorobenzene 1109-15-5,
Tris(pentafluorophenyl)borane **121919-80-0** 178233-70-0

(synthesis of salts of weakly coordinating anions paired with iodonium cations and their activity in cationic polymn. of epoxy resins)

L28 ANSWER 15 OF 34 HCA COPYRIGHT 2006 ACS on STN

136:263188 Optimizing the Least Nucleophilic Anion. A New, Strong Methyl+ Reagent. Stasko, Daniel; Reed, Christopher A. (Department of Chemistry, University of California, Riverside, CA, 92521-0304, USA). Journal of the American Chemical Society, 124(7), 1148-1149

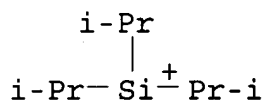
(English) 2002. CODEN: JACSAT. ISSN: 0002-7863. OTHER SOURCES: CASREACT 136:263188. Publisher: American Chemical Society.

- AB The icosahedral **carborane** anions H-CB11X6H5- (X = Cl, Br, I) are among the most inert, least coordinating, and least basic anions known. These properties are enhanced by 2,3,4,5,6-pentamethylation with Me triflate. The resulting anions, H-CB11X6Me5-, are more inert than their unmethylated precursors, have improved NMR handles, and their salts have higher soly. in low dielec. media. They sustain **superacidity** in H(H-CB11X6Me5). Protonated benzene was isolated and characterized by x-ray crystallog., moving Wheland intermediates from the status of spectroscopically observable transients to weighable reagents. The new anions sustain extreme Lewis acidity in silylium ion-like R3Si(H-CB11X6Me5) species. Treatment of i-Pr3Si(H-CB11Br6Me5) with Me triflate leads to a new Me+ reagent CH3(H-CB11Br6Me5) that is more potent than Me triflate. It methylates benzene without heating or acid catalysis to give the toluenium ion. The H-CB11X6Me5- anions come as close as any to the concept of a universal weakly coordinating anion and, with cheaper starting materials now available, promise to become specialty chems. of wide usage.
- IT 151781-83-8 175476-44-5
(comparison of silicon-29 NMR of silylium salts with **carborane** anions with different substituents)
- RN 151781-83-8 HCA
- CN Silylium, tris(1-methylethyl)-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 128709-42-2

CMF C9 H21 Si

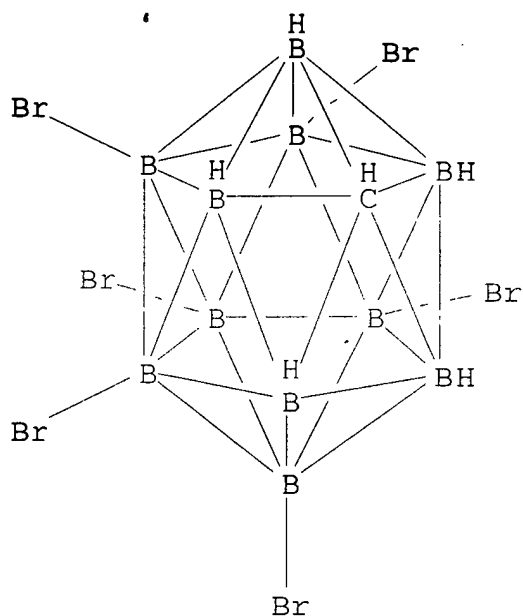


CM 2

CRN 108674-23-3

CMF C H6 B11 Br6

CCI RIS

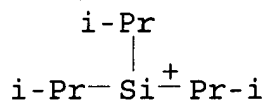


RN 175476-44-5 HCA
 CN Silylium, tris(1-methylethyl)-, 7,8,9,10,11,12-hexachloro-
 1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 128709-42-2

CMF C9 H21 Si

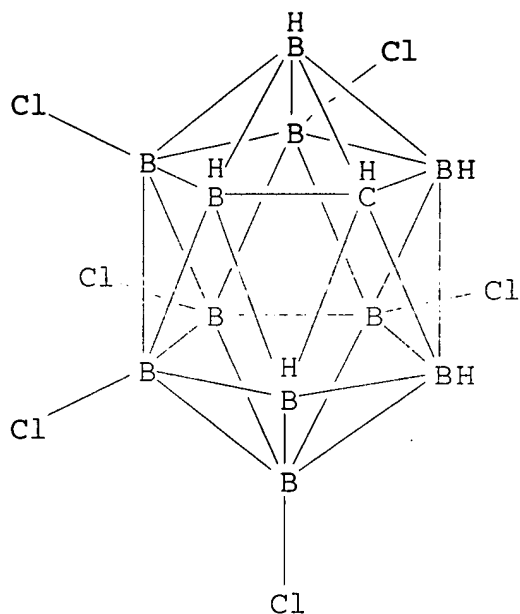


CM 2

CRN 108635-59-2

CMF C H6 B11 Cl6

CCI RIS



IT 405195-15-5 405195-16-6 405195-17-7

(for prepn. of silylium analog)

RN 405195-15-5 HCA

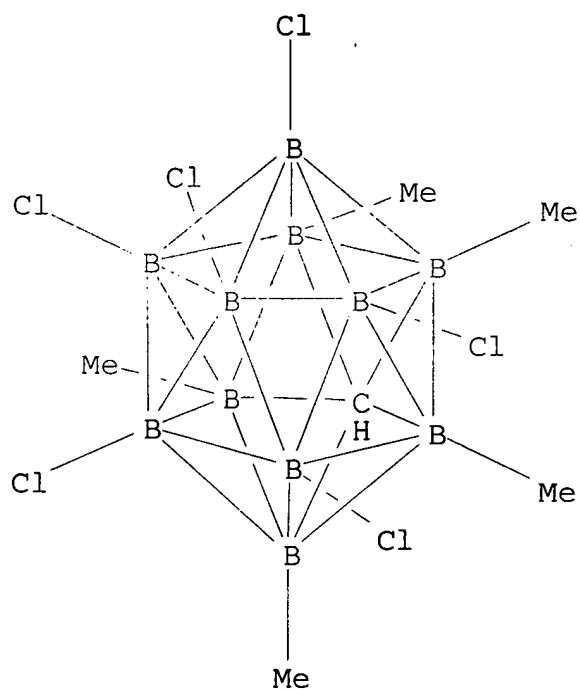
CN Methylium, triphenyl-, 7,8,9,10,11,12-hexachloro-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9Cl) (CA INDEX NAME)

CM 1

CRN 405195-07-5

CMF C6 H16 B11 Cl6

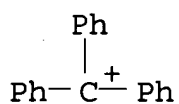
CCI RIS



CM 2

CRN 13948-08-8

CMF C19 H15



RN 405195-16-6 HCA

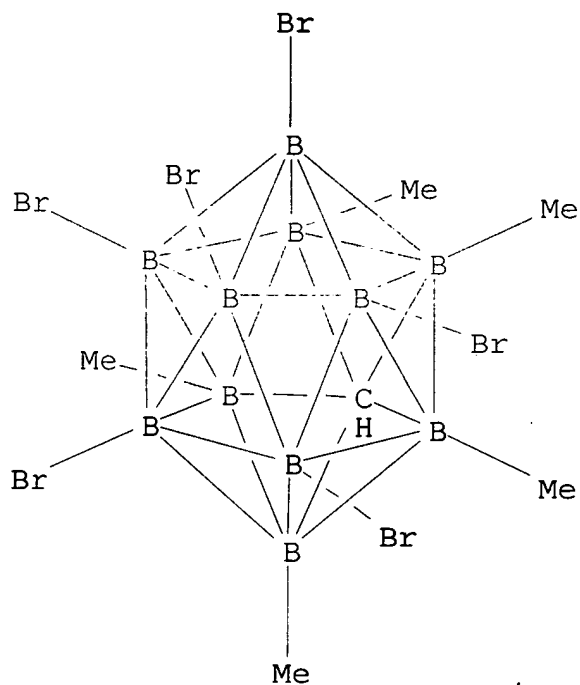
CN Methylum, triphenyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

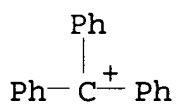
CCI RIS



CM 2

CRN 13948-08-8

CMF C19 H15



RN 405195-17-7 HCA

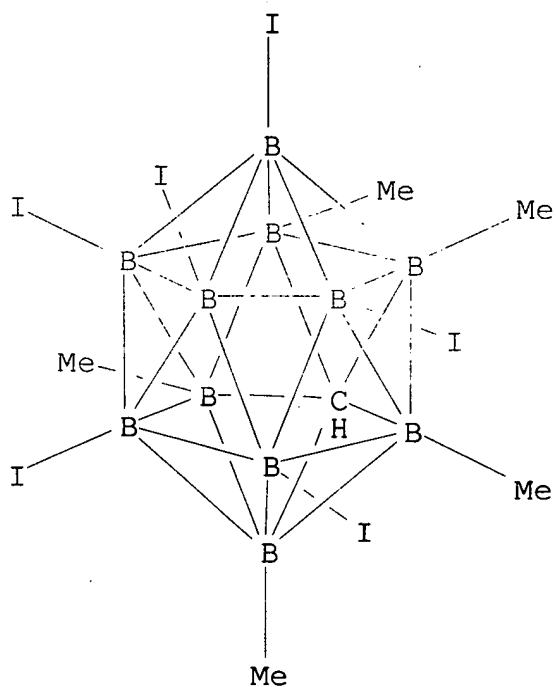
CN Methylum, triphenyl-, 1-hydro-7,8,9,10,11,12-hexaiodo-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-10-0

CMF C6 H16 B11 I6

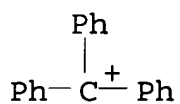
CCI RIS



CM 2

CRN 13948-08-8

CMF C19 H15

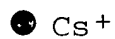
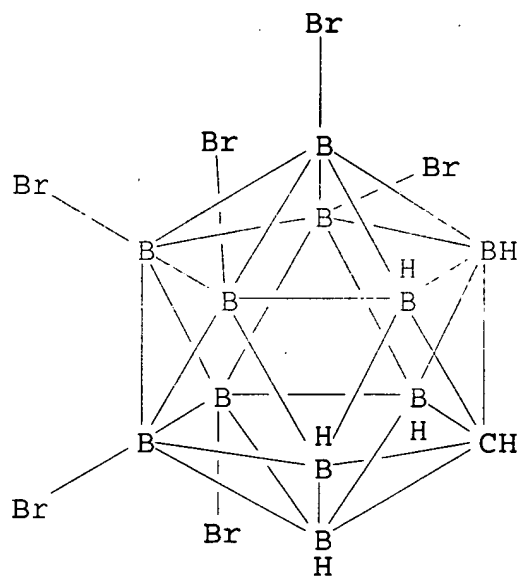


IT 121919-79-7 175476-37-6 322477-90-7

(pentamethylation by Me triflate in triflic acid)

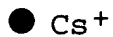
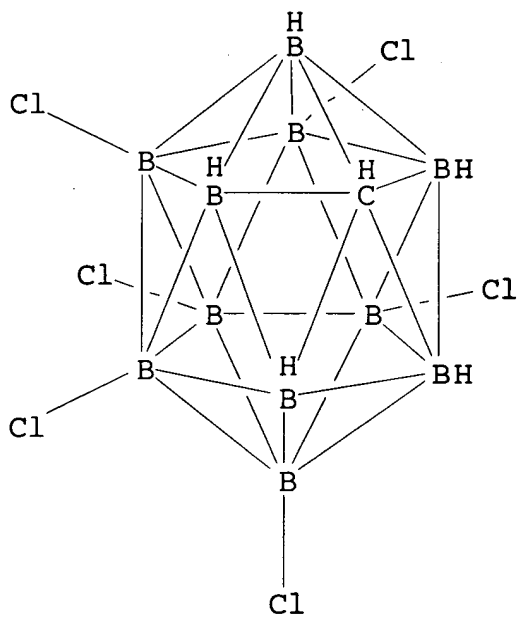
RN 121919-79-7 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, cesium (9CI) (CA INDEX NAME)



RN 175476-37-6 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, cesium (9CI) (CA INDEX NAME)



RN 322477-90-7 HCA

CN 1-Carbadodecaborate(1-), 1,2,3,4,5,6-hexahydro-7,8,9,10,11,12-hexaiodo-, cesium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 405195-05-3P

(prepn. and crystal structure of)

RN 405195-05-3 HCA

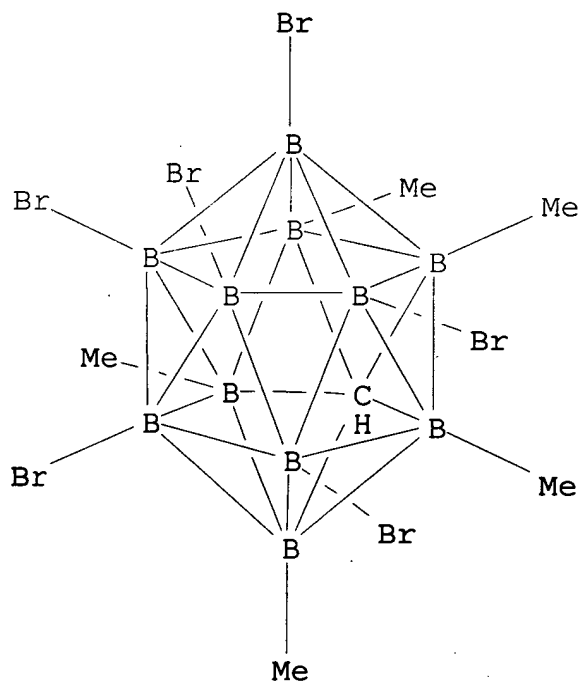
CN Cyclohexadienylum, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

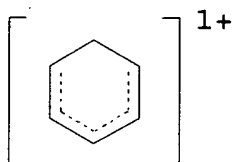
CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7



IT 405195-13-3P

(prepn. and metathesis with Me triflate, hydrogen chloride and triflic acid)

RN 405195-13-3 HCA

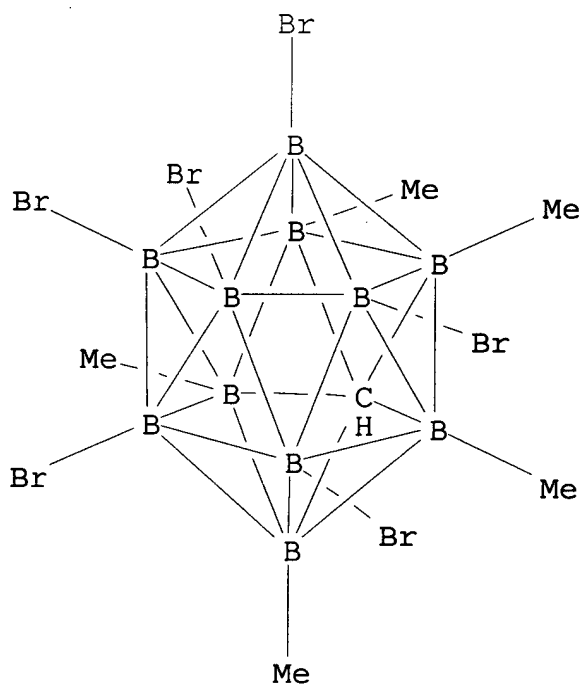
CN Silylium, tris(1-methylethyl)-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

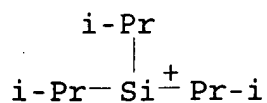
CCI RIS



CM 2

CRN 128709-42-2

CMF C9 H21 Si

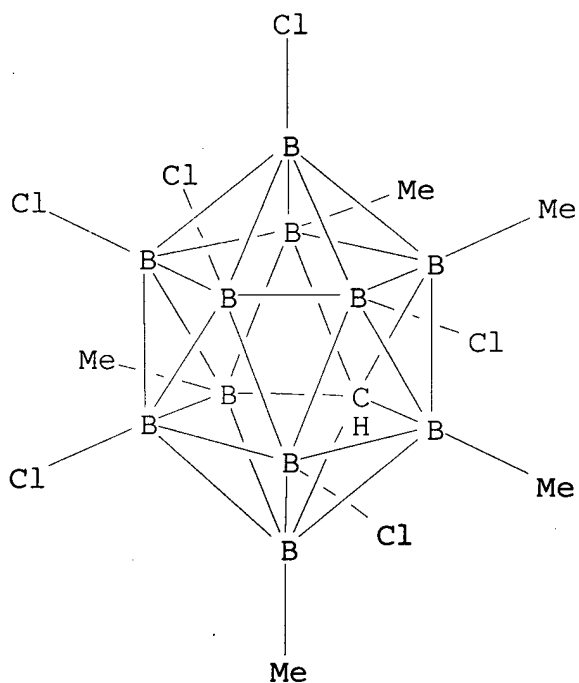


IT 405195-00-8P 405195-02-0P

(prepn. and metathesis with quaternary ammonium chloride)

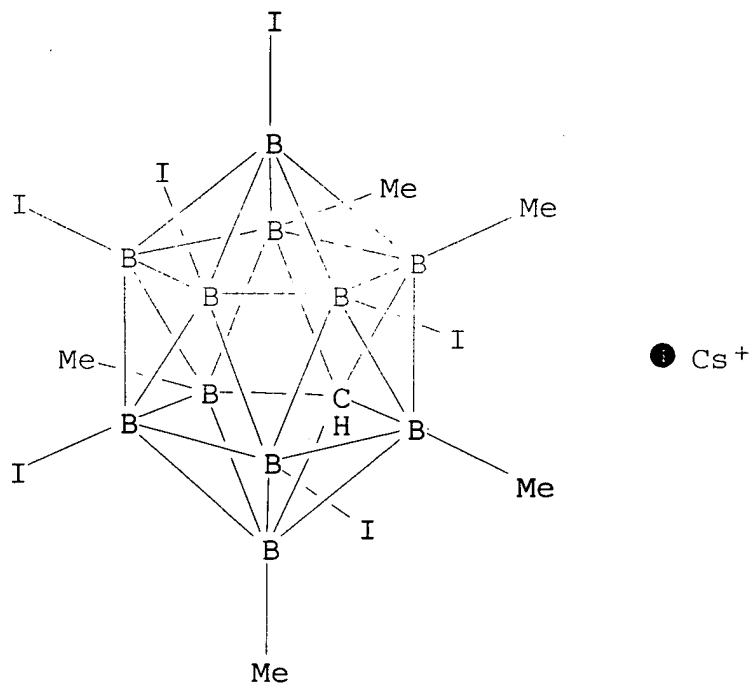
RN 405195-00-8 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1-hydro-2,3,4,5,6-pentamethyl-, cesium (9CI) (CA INDEX NAME)

● Cs⁺

RN 405195-02-0 HCA

CN 1-Carbadodecaborate(1-), 1-hydro-7,8,9,10,11,12-hexaiodo-2,3,4,5,6-pentamethyl-, cesium (9CI) (CA INDEX NAME)

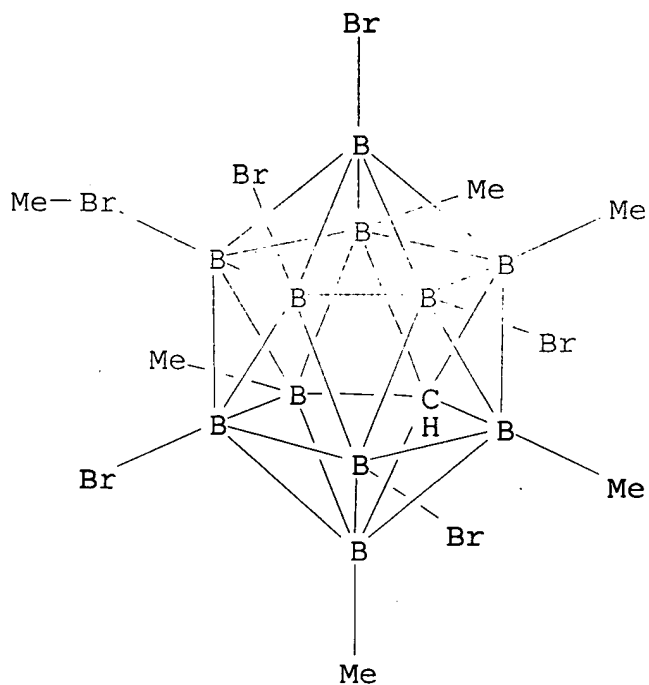


IT 405195-06-4P 405195-19-9P

(prepn. and methylation of benzene by)

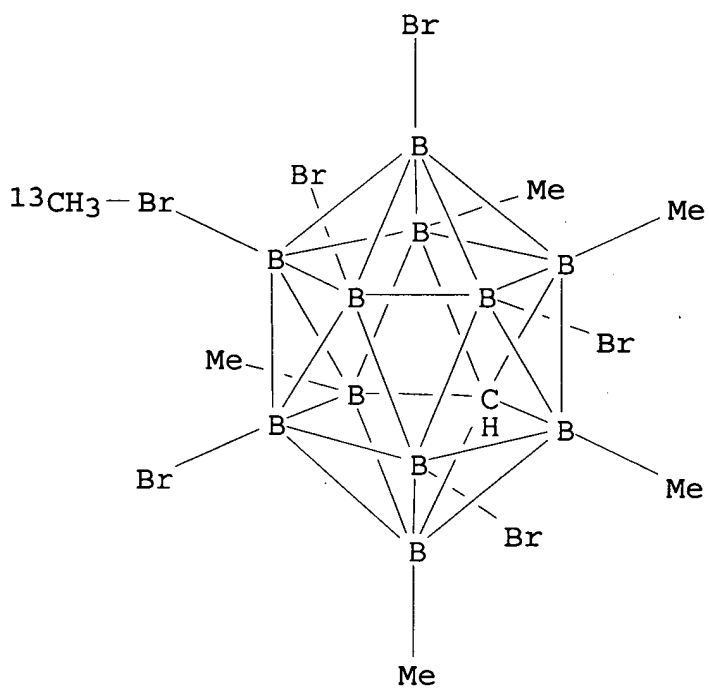
RN 405195-06-4 HCA

CN 1-Carbadodecaborane(11), 7,8,9,10,12-pentabromo-11-(bromomethane)-
2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)



RN 405195-19-9 HCA

CN 1-Carbadodecaborane(11), 7,8,9,10,12-pentabromo-11-(bromomethane-13C)-2,3,4,5,6-pentamethyl- (9CI) (CA INDEX NAME)

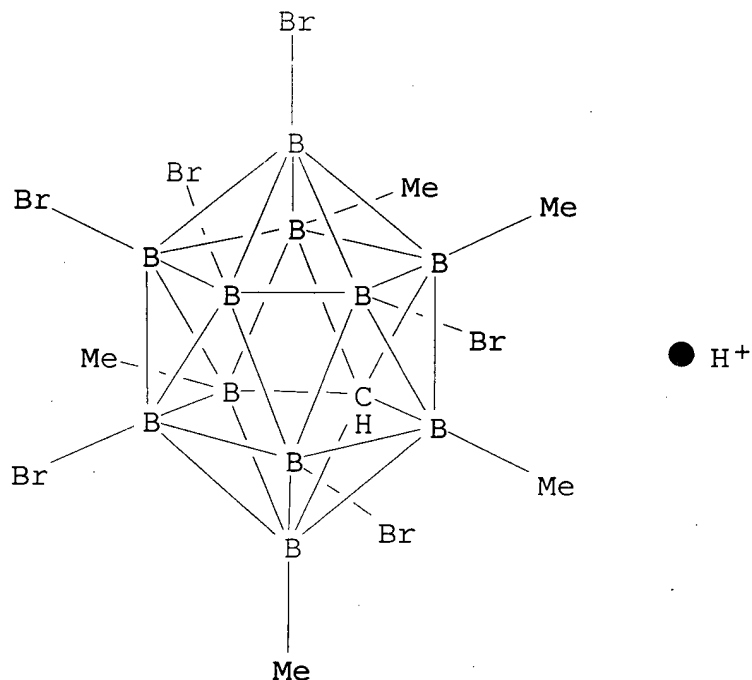


IT 405195-03-1P

(prepn. and superacidity of)

RN 405195-03-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-, hydrogen (9CI) (CA INDEX NAME)



IT 405195-18-8P 405195-21-3P

(prepn. by methylation of benzene using methylium salt of
carborane having bromo, hydro and Me substituents)

RN 405195-18-8 HCA

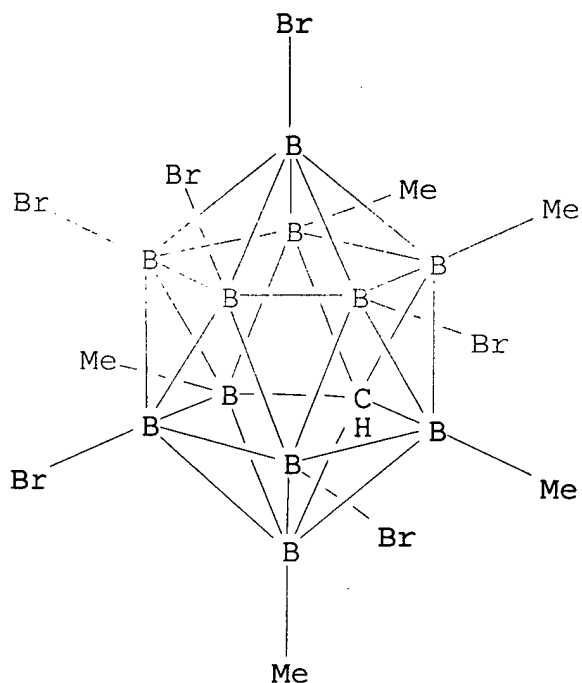
CN Cyclohexadienylium, 6-methyl-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-04-2

CMF C6 H16 B11 Br6

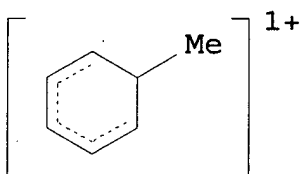
CCI RIS



CM 2

CRN 87176-46-3

CMF C7 H9



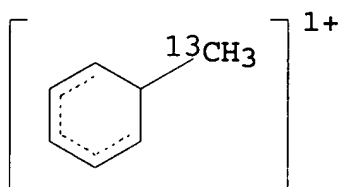
RN 405195-21-3 HCA

CN Cyclohexadienylum, 6-(methyl-13C)-, 7,8,9,10,11,12-hexabromo-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-20-2

CMF C7 H9

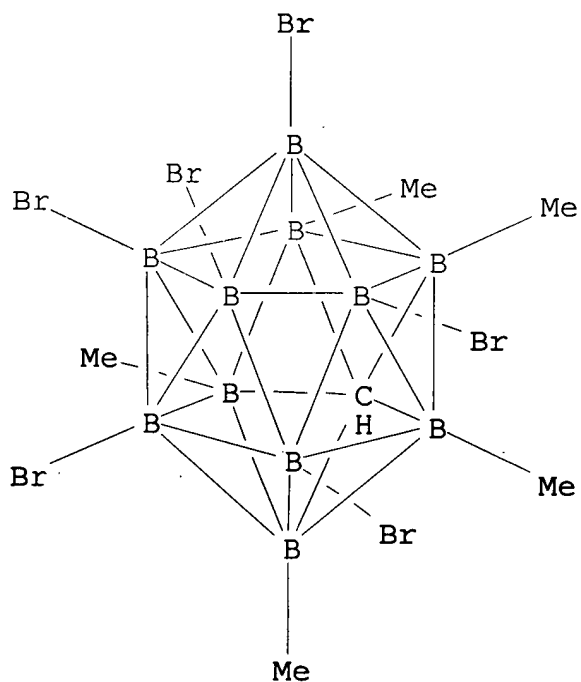


CM 2

CRN 405195-04-2

CMF C6 H16 B11 Br6

CCI RIS



IT 405195-08-6P 405195-09-7P 405195-11-1P

405195-12-2P 405195-14-4P

(prepn. of)

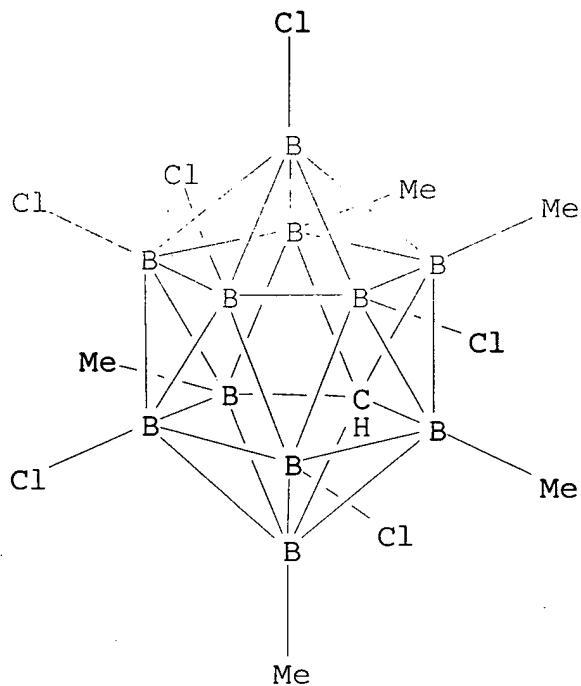
RN 405195-08-6 HCA

CN Methanaminium, N,N,N-trimethyl-, 7,8,9,10,11,12-hexachloro-1-hydro-
2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

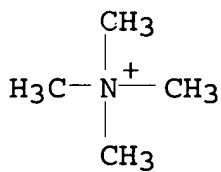
CRN 405195-07-5

CMF C6 H16 B11 Cl6
CCI RIS



CM 2

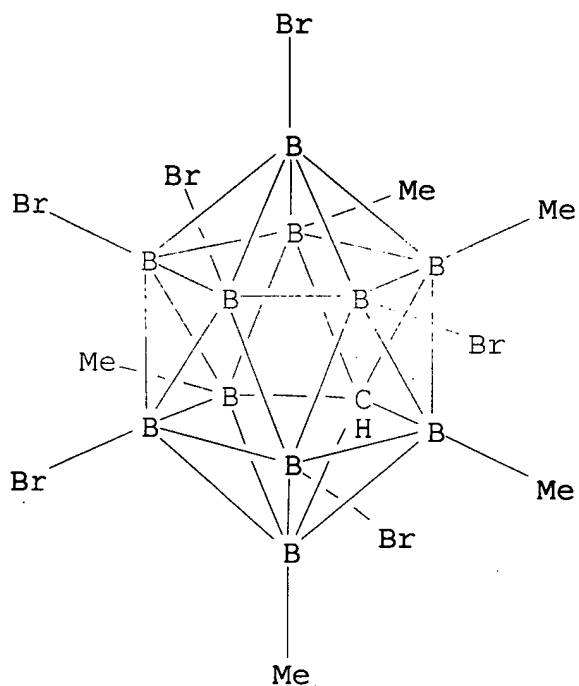
CRN 51-92-3
CMF C4 H12 N



RN 405195-09-7 HCA
CN Methanaminium, N,N,N-trimethyl-, 7,8,9,10,11,12-hexabromo-1-hydro-
2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9Cl) (CA INDEX NAME)

CM 1

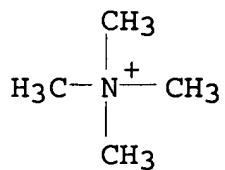
CRN 405195-04-2
CMF C6 H16 B11 Br6
CCI RIS



CM 2

CRN 51-92-3

CMF C4 H12 N



RN 405195-11-1 HCA

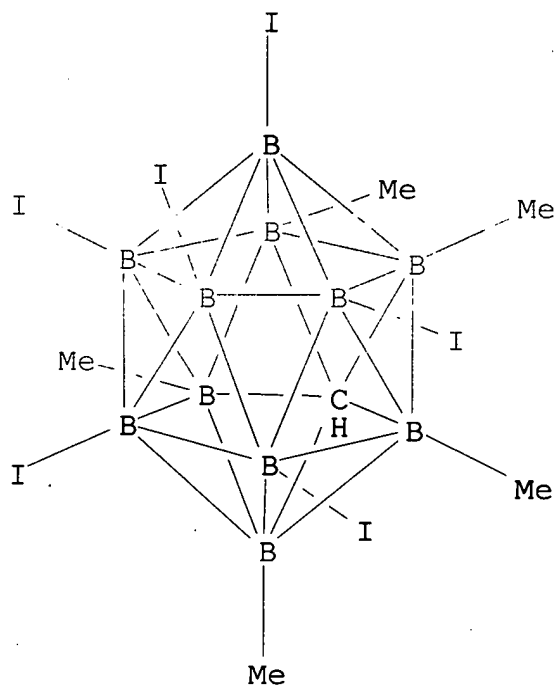
CN Methanaminium, N,N,N-trimethyl-, 1-hydro-7,8,9,10,11,12-hexaiodo-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-10-0

CMF C6 H16 B11 I6

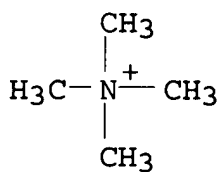
CCI RIS



CM 2

CRN 51-92-3

CMF C4 H12 N



RN 405195-12-2 HCA

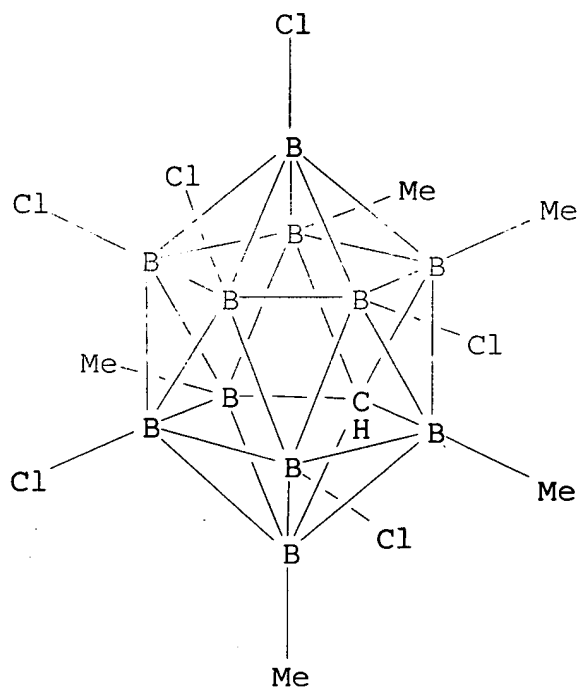
CN Silylium, tris(1-methylethyl)-, 7,8,9,10,11,12-hexachloro-1-hydro-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 405195-07-5

CMF C6 H16 B11 Cl6

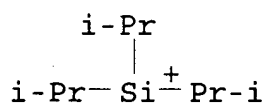
CCI RIS



CM 2

CRN 128709-42-2

CMF C9 H21 Si



RN 405195-14-4 HCA

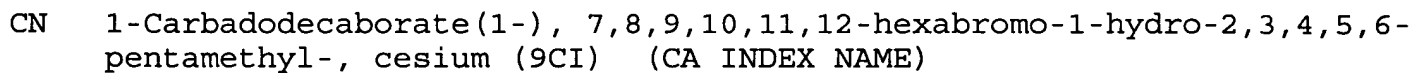
CN Silylium, tris(1-methylethyl)-, 1-hydro-7,8,9,10,11,12-hexaiodo-2,3,4,5,6-pentamethyl-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

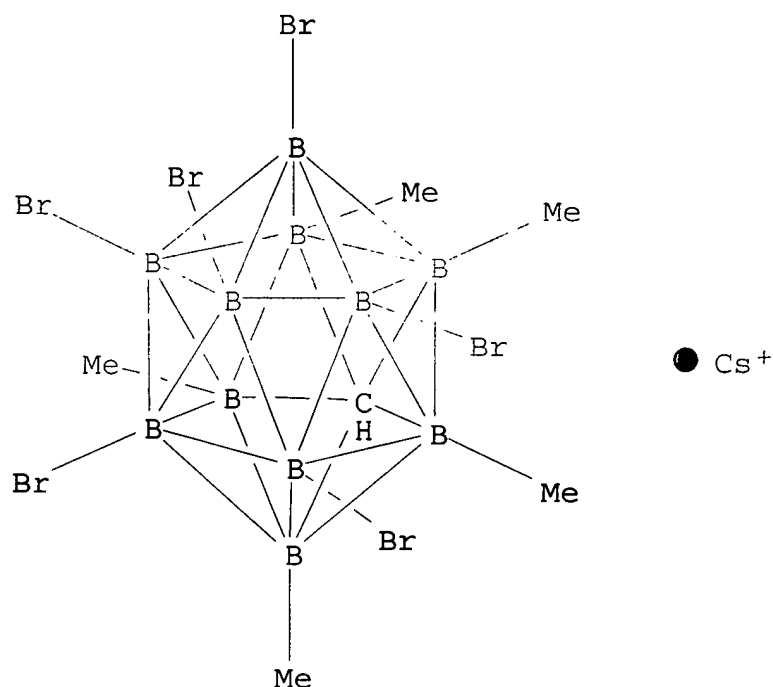
CM 1

CRN 405195-10-0

CMF C6 H16 B11 I6

CCI RIS





- CC 29-4 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 25, 75
- ST **carborane** halo methyl anion prepn extremely low
nucleophilicity; **superacidity** hydrogen halo methyl
carborane anion protonation benzene; silylium halo methyl
carborane anion **prepn** extreme Lewis
acidity; benzene methylation methylium bromo methyl
carborane anion; crystal structure benzenium bromo methyl
carborane anion; mol structure benzenium bromo methyl
carborane anion
- IT Methylation
(agents; methylium salt of **carborane** anion having
bromo, hydro and Me substituents)
- IT Lewis acidity
(extremely high; of silylium salts of **carborane** anion
having bromo, hydro and Me substituents)
- IT Nucleophilicity
(extremely low; of **carborane** anions having halo, hydro
and Me substituents)
- IT Crystal structure
Molecular structure
(of benzenium salt of **carborane** anion having bromo,
hydro and Me substituents)
- IT **Carboranes**
(prepn., crystal structure, **superacidity** and extreme

Lewis acidity of derivs. having hydro/halo/Me-substituted
carborane anions)

- IT Acidity
(**superacidity**; of hydrogen with **carborane**
counterion having halo, hydro and Me substituents)
- IT 151781-83-8 175476-44-5
(comparison of silicon-29 NMR of silylium salts with
carborane anions with different substituents)
- IT 405195-15-5 405195-16-6 405195-17-7
(for prepn. of silylium analog)
- IT 71-43-2, Benzene, reactions
(methylation by methylium salt of **carborane** anion
having bromo, hydro and Me substituents)
- IT 121919-79-7 175476-37-6 322477-90-7
(pentamethylation by Me triflate in triflic acid)
- IT 405195-05-3P
(prepn. and crystal structure of)
- IT 405195-13-3P
(prepn. and metathesis with Me triflate, hydrogen chloride and
triflic acid)
- IT 405195-00-8P 405195-02-0P
(prepn. and metathesis with quaternary ammonium chloride)
- IT 405195-06-4P 405195-19-9P
(prepn. and methylation of benzene by)
- IT 405195-03-1P
(prepn. and **superacidity** of)
- IT 405195-18-8P 405195-21-3P
(prepn. by methylation of benzene using methylium salt of
carborane having bromo, hydro and Me substituents)
- IT 405195-08-6P 405195-09-7P 405195-11-1P
405195-12-2P 405195-14-4P
(prepn. of)
- IT 405195-01-9P
(prepn., stability towards sulfuric acid, and metathesis with
quaternary ammonium chloride)

L28 ANSWER 16 OF 34 HCA COPYRIGHT 2006 ACS on STN

135:310935 **Hydroxycarborane**-added chemically amplified
photoresists and their application to bilayer deep-UV
photolithography. Hoffer, Donald C.; McDonald, Scott
Arthur; Maharlwara, Alpan P.; Miller, Robert D.; Mitchell, Joseph;
Wallraff, Gregory Michael (International Business Machines Corp.,
USA). Jpn. Kokai Tokkyo Koho JP 2001290264 A2 20011019, 28 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-39108 20010215.
PRIORITY: US 2000-507522 20000218.

AB The **photoresists**, exhibiting excellent O-plasma-etch
resistance and high transmittance against deep-UV light, consist of
acid-labile polymers, **photoacid** generators, and

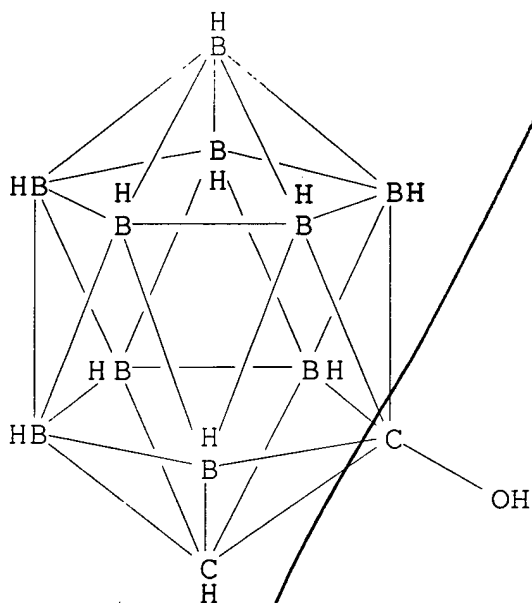
hydroxycarboranes which may be included in the said polymers as pendant groups.

IT 23987-99-7P, 1-Hydroxy-o-carborane
199180-66-0P

(**hydroxycarborane-added deep-UV photoresists**
and their application to bilayer **photolithog.**)

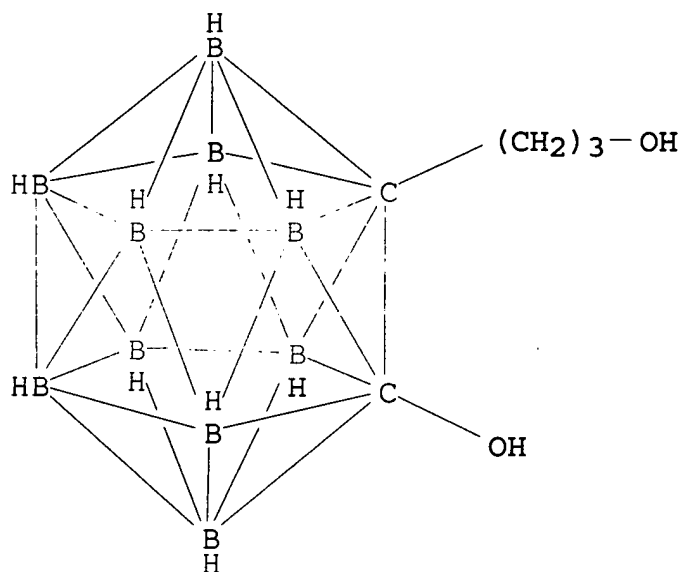
RN 23987-99-7 HCA

CN 1,2-Dicarbadoecaboran(12)-1-ol (8CI, 9CI) (CA INDEX NAME)

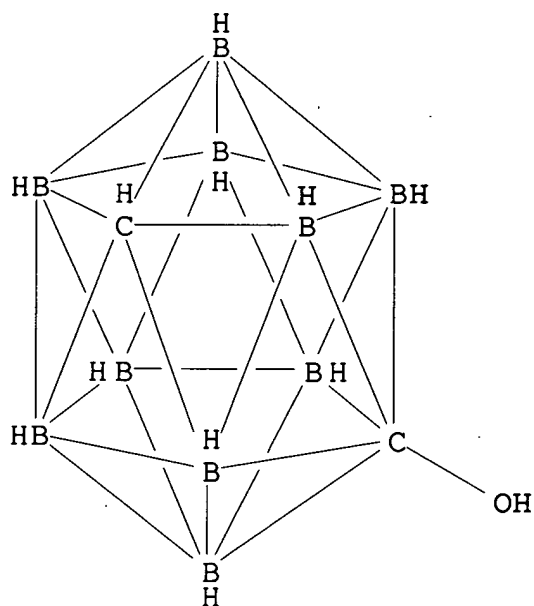


RN 199180-66-0 HCA

CN 1,2-Dicarbadoecaborane(12)-1-propanol, 2-hydroxy- (9CI) (CA INDEX NAME)

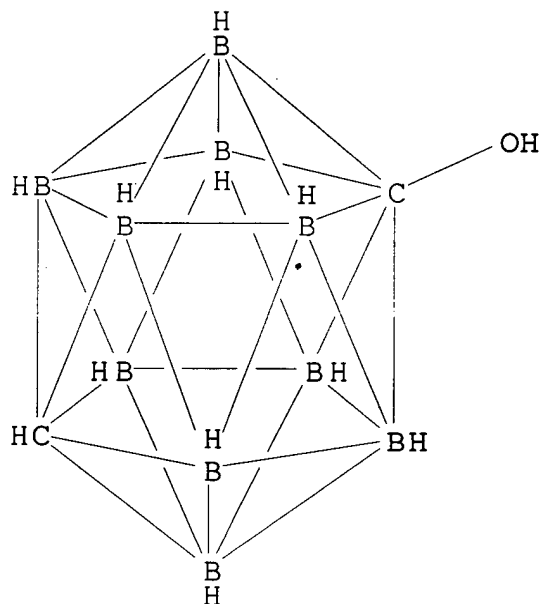


IT 23988-02-5, 1-Hydroxy-m-carborane
 54360-43-9, 1-Hydroxy-p-carborane
 (hydroxycarborane-added deep-UV photoresists
 and their application to bilayer photolithog.)
 RN 23988-02-5 HCA
 CN 1,7-Dicarbadoecaboran(12)-1-ol (8CI, 9CI) (CA INDEX NAME)



RN 54360-43-9 HCA

CN 1,12-Dicarbadoodecaboran(12)-1-ol (9CI) (CA INDEX NAME)

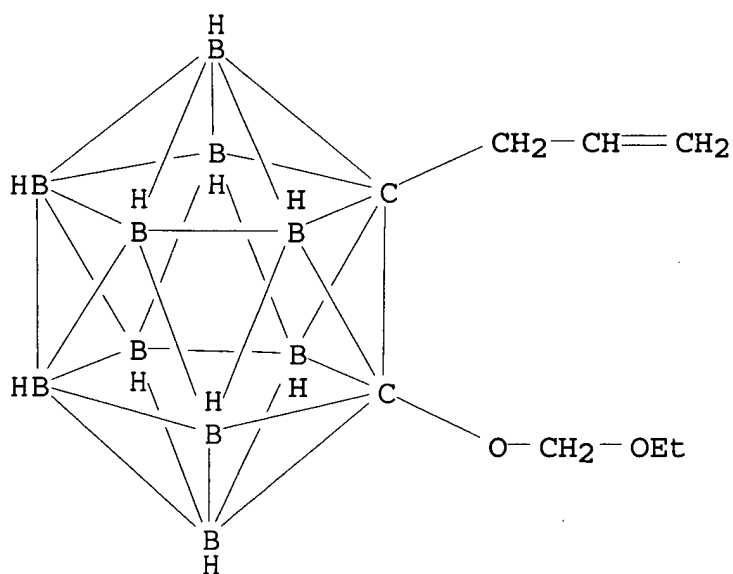


IT 199180-65-9P

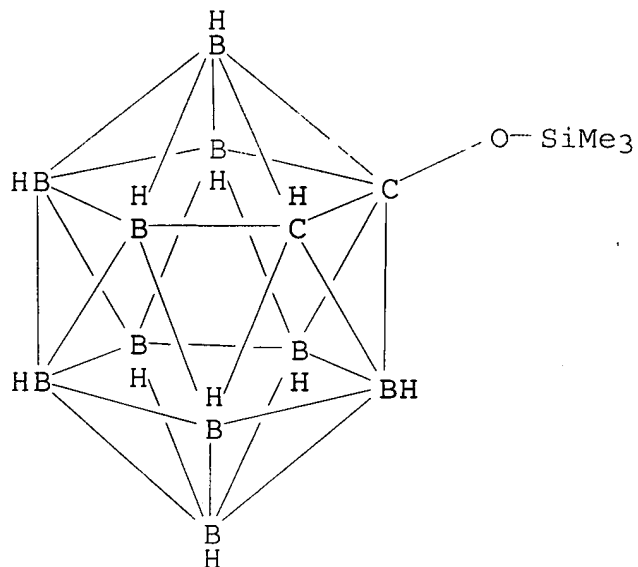
(in prepn. of hydroxycarborane monomers for chem.
amplified deep-UV photoresists)

RN 199180-65-9 HCA

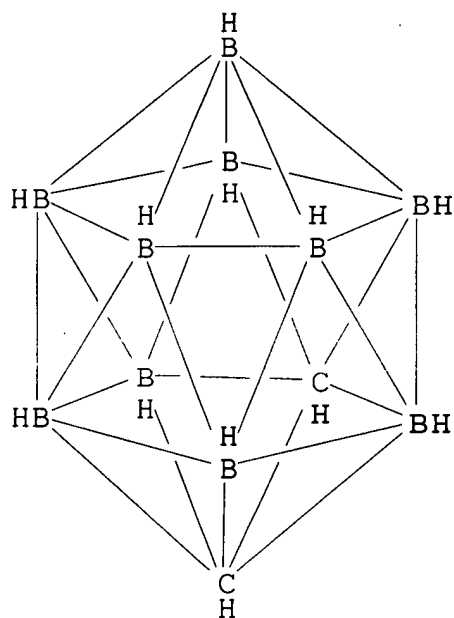
CN 1,2-Dicarbadoodecaborane(12), 1-(ethoxymethoxy)-2-(2-propenyl)- (9CI)
(CA INDEX NAME)



IT 199180-71-7P, 1-Trimethylsiloxy-o-carborane
(in prepn. of hydroxycarboranes for chem. amplified
deep-UV photoresists)
RN 199180-71-7 HCA
CN 1,2-Dicarbadoecaborane(12), 1-[(trimethylsilyl)oxy]- (9CI) (CA
INDEX NAME)

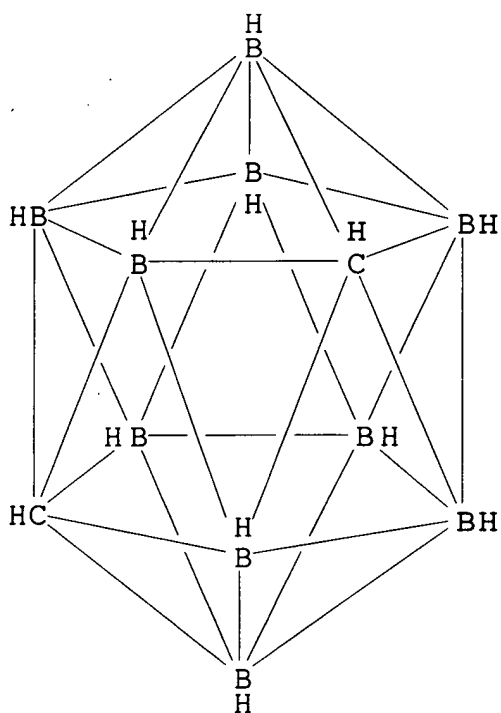


IT 16872-09-6, o-Carborane 16986-24-6, m-
Carborane 20644-12-6, p-Carborane
(in prepn. of hydroxycarboranes for chem. amplified
deep-UV photoresists)
RN 16872-09-6 HCA
CN 1,2-Dicarbadoecaborane(12) (8CI, 9CI) (CA INDEX NAME)



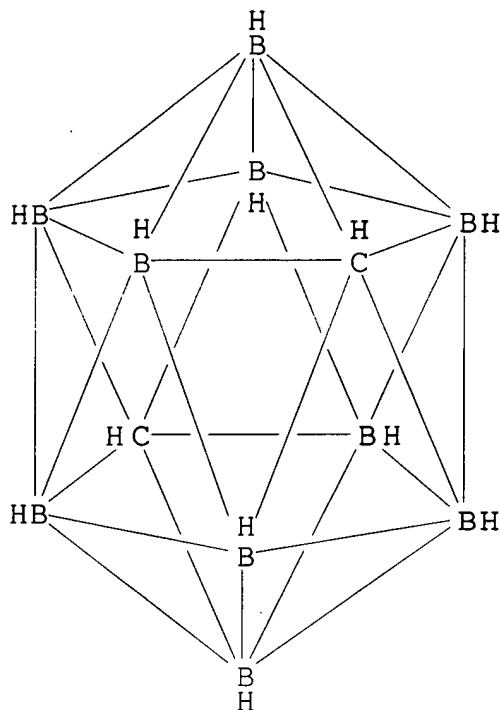
RN 16986-24-6 HCA

CN 1,7-Dicarbado-dodecaborane(12) (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 20644-12-6 HCA

CN 1,12-Dicarbadoodecaborane(12) (7CI, 8CI, 9CI) (CA INDEX NAME)



- IC ICM G03F007-004
ICS C08K005-55; C08L025-04; C08L033-12; C08L101-02; G03F007-039;
G03F007-26; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 38, 76
- ST oxygen etching resistant **hydroxycarborane** copolymd
photoresist; chem amplified **photoresist**
hydroxycarborane pendant group; bilayer **photolithog**
deep UV transmittance **hydroxycarborane**; semiconductor
processing deep UV bilayer **photolithog**
- IT **Photoresists**
(UV, deep-UV; **hydroxycarborane**-added deep-UV
photoresists and their application to bilayer
photolithog.)
- IT **Photolithography**
(bilayer; **hydroxycarborane**-added deep-UV
photoresists and their application to bilayer
photolithog.)
- IT **Resists**
(etching, reactive ion; **hydroxycarborane**-added deep-UV
photoresists and their application to bilayer
photolithog.)

- IT Semiconductor device fabrication
(**hydroxycarborane**-added deep-UV photoresists
and their application to bilayer photolithog.)
- IT 23987-99-7P, 1-Hydroxy-o-carborane
199180-66-0P
(**hydroxycarborane**-added deep-UV photoresists
and their application to bilayer photolithog.)
- IT 23988-02-5, 1-Hydroxy-m-carborane
54360-43-9, 1-Hydroxy-p-carborane
(**hydroxycarborane**-added deep-UV photoresists
and their application to bilayer photolithog.)
- IT 367273-04-9P
(**hydroxycarborane**-added deep-UV photoresists
and their application to bilayer photolithog.)
- IT 100-42-5D, Styrene, polymers 30525-32-7, tert-Butyl
acrylate-methyl methacrylate copolymer
(**hydroxycarborane**-added deep-UV photoresists
and their application to bilayer photolithog.)
- IT 199180-65-9P
(in prepn. of **hydroxycarborane** monomers for chem.
amplified deep-UV photoresists)
- IT 556-56-9, Allyl iodide
(in prepn. of **hydroxycarborane** monomers for chem.
amplified deep-UV photoresists)
- IT 199180-71-7P, 1-Trimethylsiloxy-o-carborane
(in prepn. of **hydroxycarboranes** for chem. amplified
deep-UV photoresists)
- IT 5796-98-5, Bis(trimethylsilyl) peroxide 16872-09-6, o-
Carborane 16986-24-6, m-**Carborane**
20644-12-6, p-**Carborane**
(in prepn. of **hydroxycarboranes** for chem. amplified
deep-UV photoresists)
- IT 18393-55-0D, Triphenylsulfonium, salts
(**photoacid** generators; **hydroxycarborane**-added
deep-UV photoresists and their application to bilayer
photolithog.)

L28 ANSWER 17 OF 34 HCA COPYRIGHT 2006 ACS on STN

133:187198 Taming **superacids**: stabilization of the fullerene
cations HC60+ and C60.bul.+ . Reed, Christopher A.; Kim, Kee-Chan;
Bolskar, Robert D.; Mueller, Leonard J. (Department of Chemistry,
University of California, Riverside, CA, 92521-0403, USA). Science
(Washington, D. C.), 289(5476), 101-104 (English) 2000. CODEN:
SCIEAS. ISSN: 0036-8075. Publisher: American Association for the
Advancement of Science.

AB A new **superacid**, H(CB11H6X6) (X = chlorine or bromine),
whose conjugate base is the exceptionally inert CB11H6X6-
carborane anion, separates Broensted acidity from oxidizing

capacity and anion nucleophilicity in a manner not previously achieved. Reaction of this **superacid** with C60 gives HC60+ as a stable ion in soln. and in the solid state. In a sep. expt., an oxidant was developed such that the long-sought C60.bul.+ ion can be synthesized in soln. The prepn. of these two fullerene carbocations is a notable departure from the prevalent chem. of C60, which is dominated by the formation of anions or the addn. of nucleophiles. The H(CB11H6X6) **superacid** overcomes the major limitations of presently known **superacids** and has potentially wide application.

IT 288631-05-0P

(prepn. and redn.)

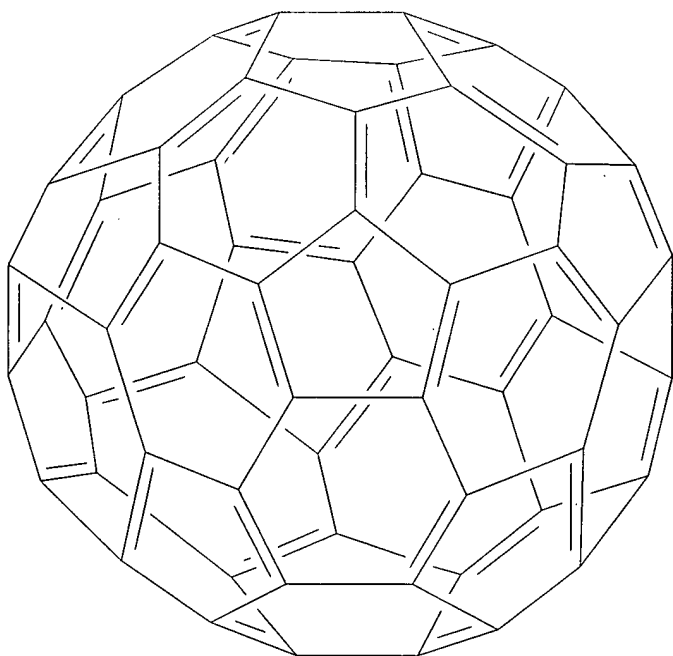
RN 288631-05-0 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, salt with [5,6]fullerene-C60-Ih (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 108739-25-9

CMF C60

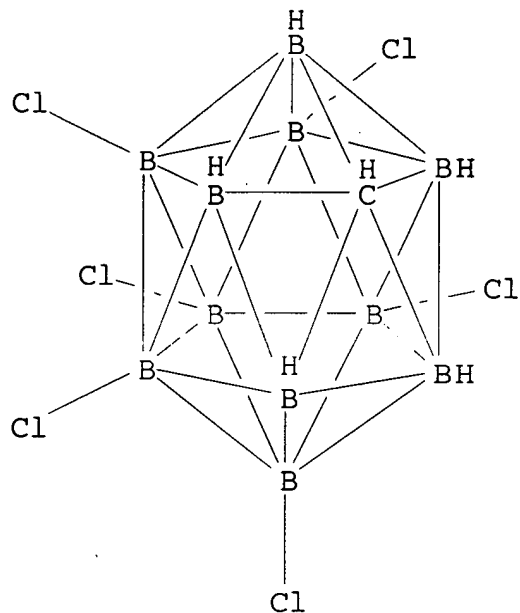


CM 2

CRN 108635-59-2

CMF C H6 B11 Cl6

CCI RIS



IT 288631-04-9P

(prepn. and use as oxidant to prep. stable C60.bul.+)

RN 288631-04-9 HCA

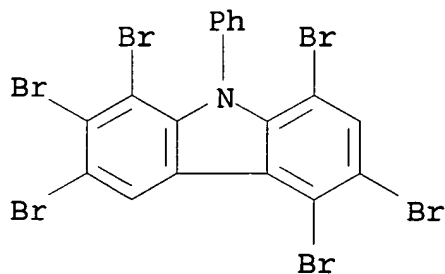
CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, salt with 1,2,3,5,6,8-hexabromo-9-phenyl-9H-carbazole (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 288631-03-8

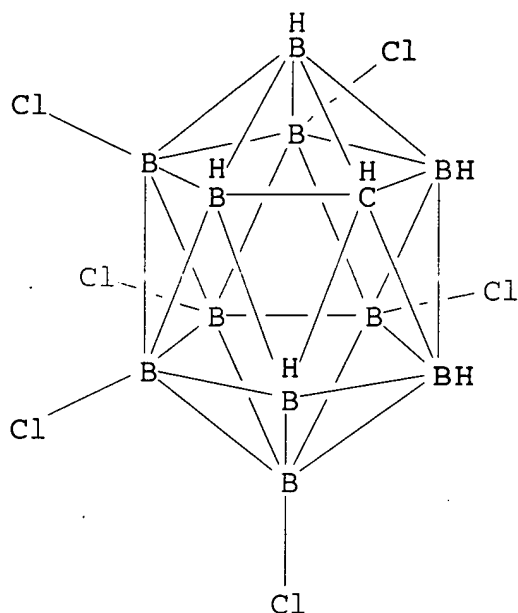
CMF C18 H7 Br6 N

CCI RIS



CM 2

CRN 108635-59-2
 CMF C H6 B11 Cl6
 CCI RIS



IT 278796-67-1P
 (prepn. and use as **superacid** in protonation of
 fullerene-C60)

RN 278796-67-1 HCA
 CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-
 hexahydro-, hydrogen (9CI) (CA INDEX NAME)

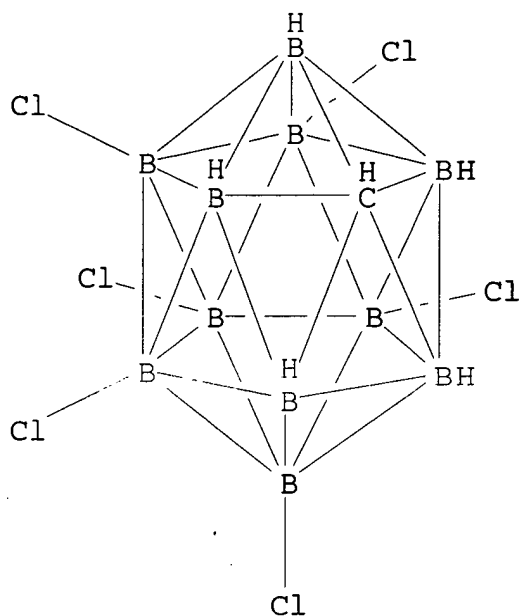
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 235429-30-8P
 (prepn. by protonation of benzene using **carborane**
superacid H(CB11H6X6))

RN 235429-30-8 HCA
 CN Cyclohexadienylium, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-
 1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

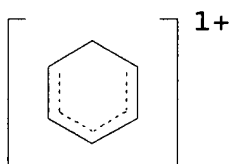
CRN 108635-59-2
 CMF C H6 B11 Cl6
 CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7

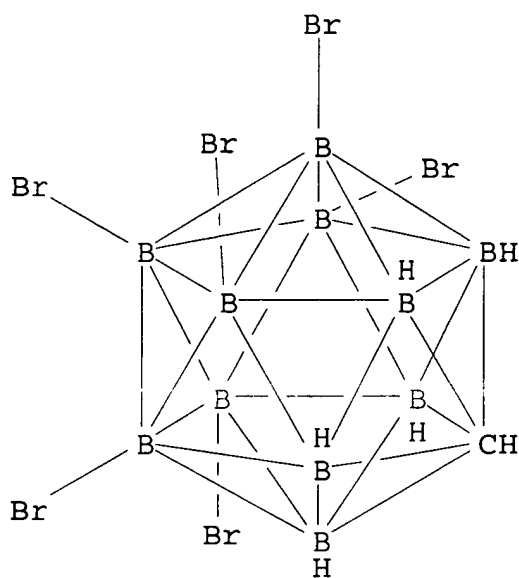


IT 160568-32-1P

(prepn. for use as **superacid**)

RN 160568-32-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, hydrogen (9Cl) (CA INDEX NAME)



IT 288631-06-1P

(prepn. of)

RN 288631-06-1 HCA

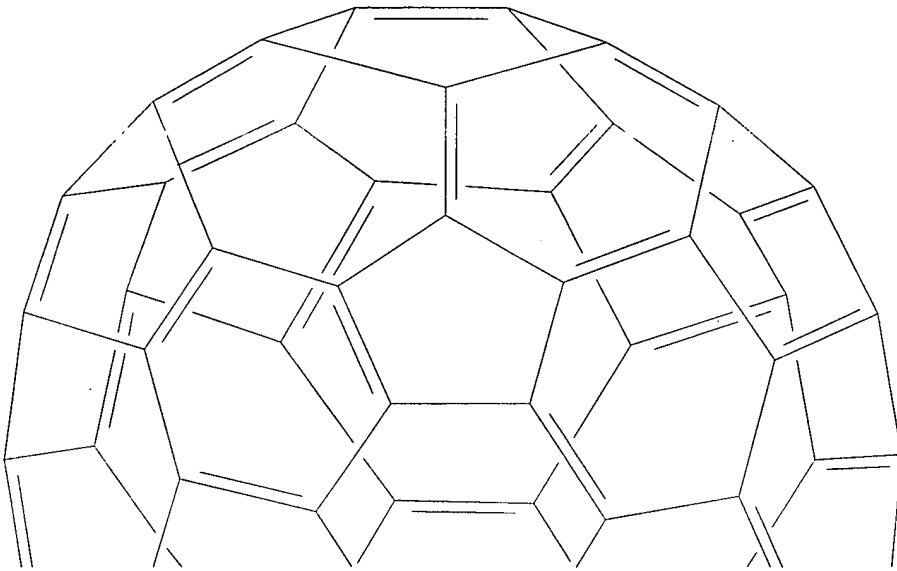
CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, salt with [5,6]fullerene-C70-D5h(6) (1:1) (9CI) (CA INDEX NAME)

CM 1

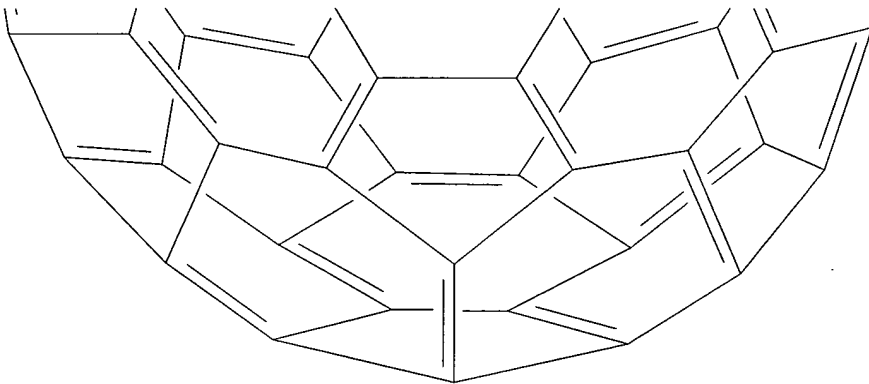
CRN 134932-61-9

CMF C70

PAGE 1-A



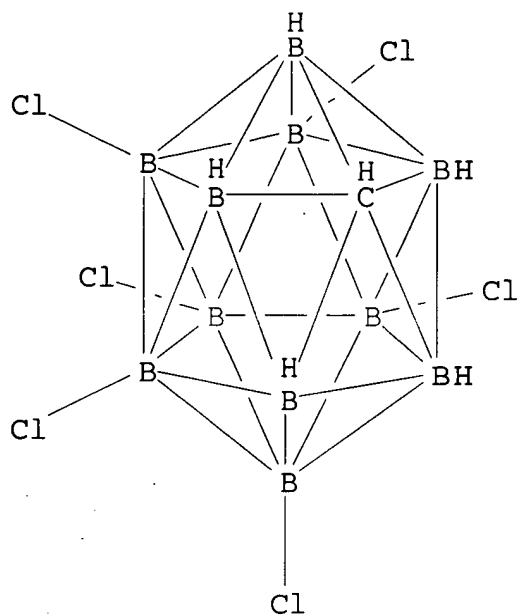
PAGE 2-A



CM 2

CRN 108635-59-2

CMF C H6 B11 Cl6
CCI RIS



IT 288631-01-6P
(prepn. using **carborane superacid** H(CB₁₁H₆X₆)
and fluxionality of proton on fullerene surface)

RN 288631-01-6 HCA

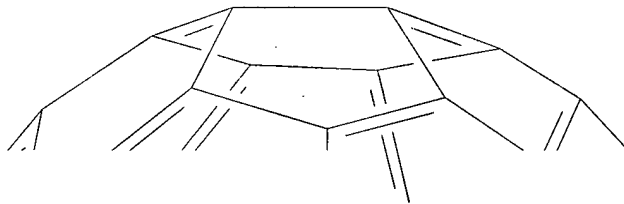
CN [5,6]Fulleren-C₆₀-1h-1(2H)-ylium, 7,8,9,10,11,12-hexachloro-
1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

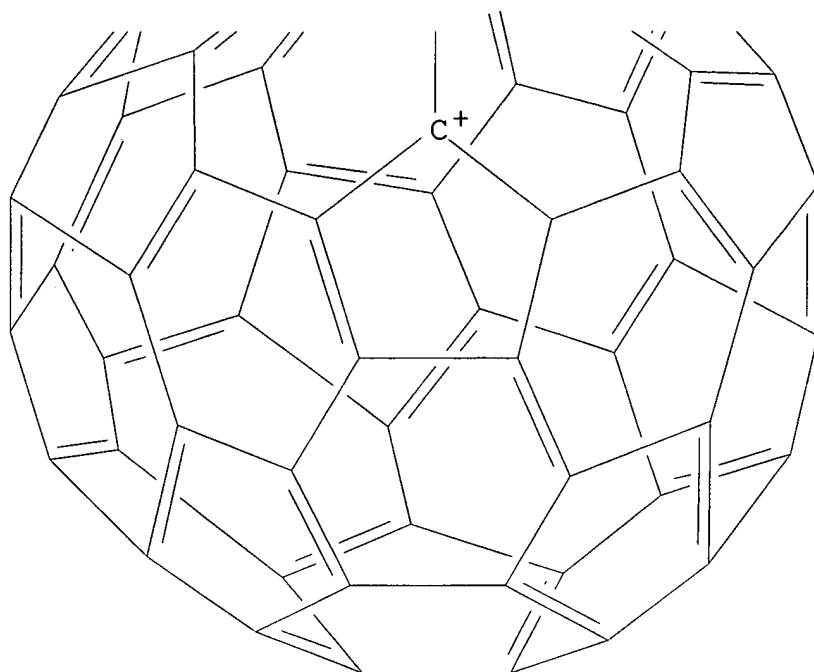
CRN 135822-20-7

CMF C₆₀ H

PAGE 1-A



PAGE 2-A

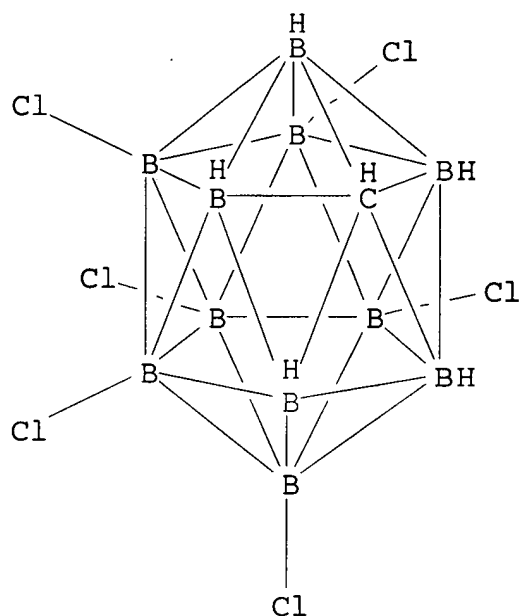


CM 2

CRN 108635-59-2

CMF C H6 B11 C16

CCI RIS



IT 168285-74-3 235429-31-9

(reactant for prepn. of carborane superacid
H(CB₁₁H₆X₆))

RN 168285-74-3 HCA

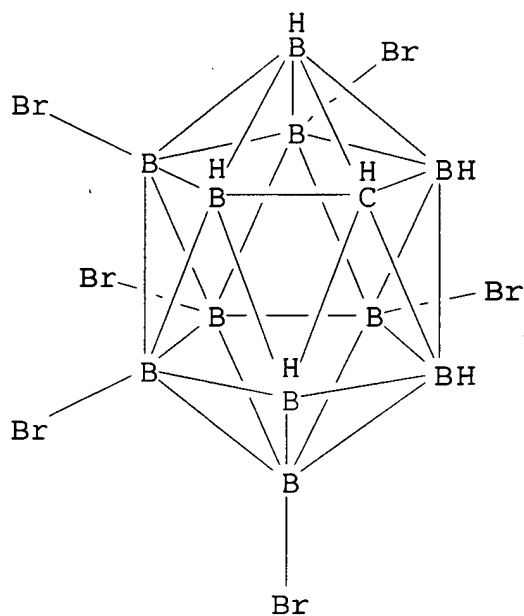
CN Silylium, triethyl-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-
1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3

CMF C H6 B11 Br6

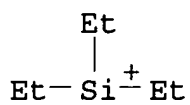
CCI RIS



CM 2

CRN 44564-80-9

CMF C6 H15 Si



RN 235429-31-9 HCA

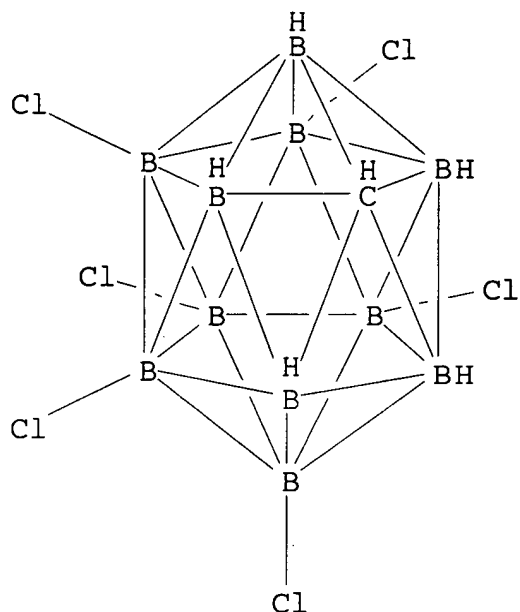
CN Silylium, triethyl-, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

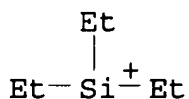
CCI RIS



CM 2

CRN 44564-80-9

CMF C6 H15 Si



CC 78-8 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 25, 27, 29

ST **carborane superacid** prepn fullerene protonation;
fullerene protonation oxidn

IT Protonation

(protonation of fullerene-C60 using **carborane superacid** H(CB11H6X6))IT **Superacids**(protonation of fullerene-C60 using **carborane superacid** H(CB11H6X6))

IT 288631-05-0P

(prepn. and redn.)

IT 288631-04-9P

(prepn. and use as oxidant to prep. stable C60.bul.+)

IT 278796-67-1P

(prepn. and use as **superacid** in protonation of

- fullerene-C60)
- IT 235429-30-8P
(prepn. by protonation of benzene using **carborane superacid** H(CB11H6X6))
- IT 160568-32-1P
(prepn. for use as **superacid**)
- IT 288631-06-1P
(prepn. of)
- IT 288631-01-6P
(prepn. using **carborane superacid** H(CB11H6X6) and fluxionality of proton on fullerene surface)
- IT 288631-02-7P
(prepn., oxidn. potential and oxidn. with silver hexachlorocarborane)
- IT 99685-96-8, [5,6]Fullerene-C60-Ih
(protonation with **carborane superacid** H(CB11H6X6) to give isolated (HC60)(CB11H6X6) and oxidn. using brominated phenylcarbazole cation to give stable C60.bul.+)
- IT 168285-74-3 235429-31-9
(reactant for prepn. of **carborane superacid** H(CB11H6X6))

L28 ANSWER 18 OF 34 HCA COPYRIGHT 2006 ACS on STN

133:80072 Gas-Phase Acidities of Some Neutral Bronsted

Superacids: A DFT and ab Initio Study. Koppel, Ilmar A.; Burk, Peeter; Koppel, Ivar; Leito, Ivo; Sonoda, Takaaki; Mishima, Masaaki (Institute of Chemical Physics Department of Chemistry, University of Tartu, Tartu, 51014, Estonia). Journal of the American Chemical Society, 122(21), 5114-5124 (English) 2000. CODEN: JACSAT. ISSN: 0002-7863. Publisher: American Chemical Society.

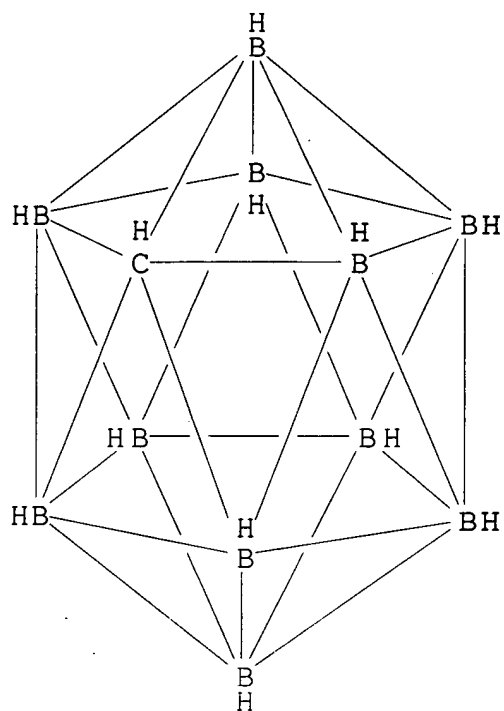
AB For the first time G2 or G2(MP2) calcns. or both have been performed to calc. the acidity and deprotonation enthalpy of classical strong mineral acids HClO4, CF3SO3H, FSO3H, H2SO4, HBF4, HPO3, and HNO3. Also, the intrinsic acidities and gas-phase deprotonation enthalpies for 39 neutral strong or superstrong Bronsted acids, Bronsted-Lewis conjugate acids, and some compds. modeling the acidic clusters of zeolites were calcd. using the DFT B3LYP 6-311+G** approach. DFT B3LYP method at 6-31+G* basis was used for the calcn. of the intrinsic Bronsted acidities of the conjugate acids of the **monocarborane** anion CB11H12- and its mono-, hexa-, and dodecafluorinated analogs. G2 and G2(MP2) theories describe the acidities of different compds. better than DFT B3LYP//6-311+G**. However, the DFT results could also be used for the estn. of the acidity of compds. which are out of reach of G2 or G2(MP2) theory. The estd. .DELTA.Gacid values obtained this way can be used as the substitutes for the unavailable exptl. values, esp. for those (rather numerous) compds. for which the exptl. detn. of .DELTA.Gacid

is very difficult. In the case of practically all considered families of compds. extremely high acidities (low .DELTA.Gacid values) could be reached. If the compds. were started from HF as the parent acid, then the estd. .DELTA.Gacid as low as 249.0 kcal/mol (for F(OSO₂)₄H) could be reached by formation of Bronsted-Lewis conjugate acids by consecutive complexation with SO₃ mols. Also very low .DELTA.Gacid value (.DELTA.Gacid(HSbF₆) = 255.5) could be reached by complexation of HF with SbF₅. At least as high intrinsic acidities as in case of the strongest Bronsted-Lewis **superacids** could be reached in the case of progressive introduction of highly electroneg., correctly oriented polarizable dipolar electron-accepting substituents into the acidity site. Indeed, the introduction of five CN groups into cyclopentadiene is expected to lead to the acidity .DELTA.Gacid = 250.1 kcal/mol which is lower than the corresponding quantity even for hexafluoroantimonic acid (.DELTA.Gacid = 255.5 kcal/mol). However, by far the strongest intrinsic Bronsted acidity (.DELTA.Gacid = 209 kcal/mol) for dodecafluorosubstituted **carborane** acid CB₁₁F₁₂H is predicted to exceed the intrinsic acidity of sulfuric acid by about 90 kcal/mol or by almost 70 powers of ten, whereas semi-empirical PM3 calcns. suggest that the conjugate acid of the **dodecatrifluoromethylmonocarborane** anion CB₁₁(CF₃)₁₂⁻ could be the first neutral Bronsted **superacid** whose acidity (deprotonation energy) is expected to be below the landmark 200 kcal/mol level. An approx. linear relationship is found to hold between the calcd. gas-phase acidities of strong and superstrong Bronsted acids and the corresponding Hammett acidity functions of the corresponding neat acids. The simultaneous existence of the widely overlapping areas on the gas-phase acidity scale of neutral and cationic Bronsted acids evidences strongly for the feasibility of the spontaneous proton-transfer equil. between neutral Bronsted acids and bases.

IT 73758-08-4 144778-03-0 160568-32-1
 213553-27-6 213553-30-1 278796-65-9
 278796-66-0 278796-67-1 278796-68-2
 278796-69-3 278796-70-6 278796-71-7
 278796-72-8 278796-76-2

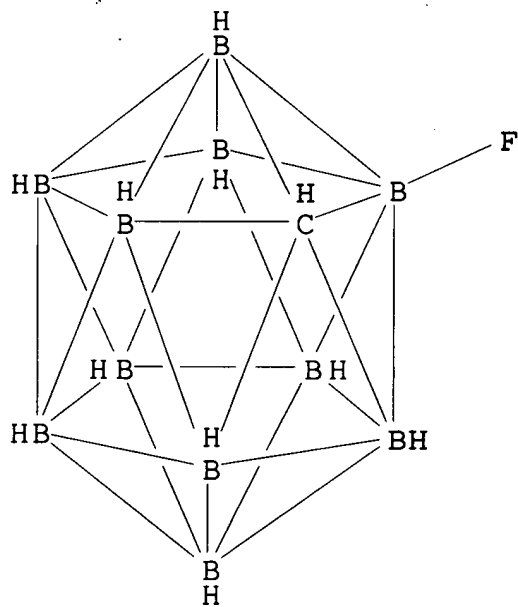
(DFT and ab initio study on gas-phase acidity of bronsted **superacids**)

RN 73758-08-4 HCA
 CN 1-Carbadodecaborate(1-), dodecahydro- (9CI) (CA INDEX NAME)



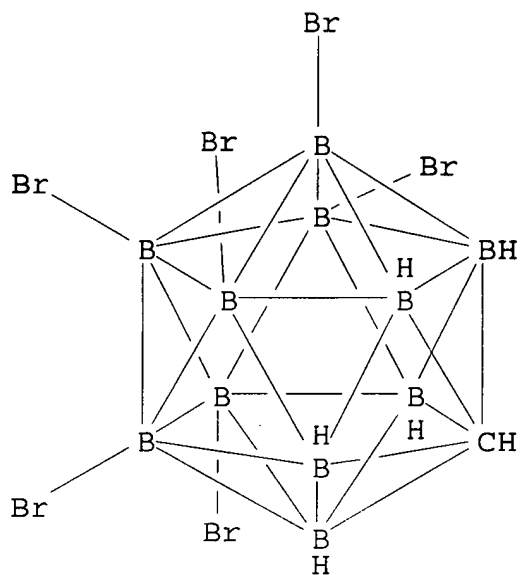
RN 144778-03-0 HCA

CN 1-Carbadodecaborate(1-), 2-fluoro-1,3,4,5,6,7,8,9,10,11,12-undecahydro- (9CI) (CA INDEX NAME)



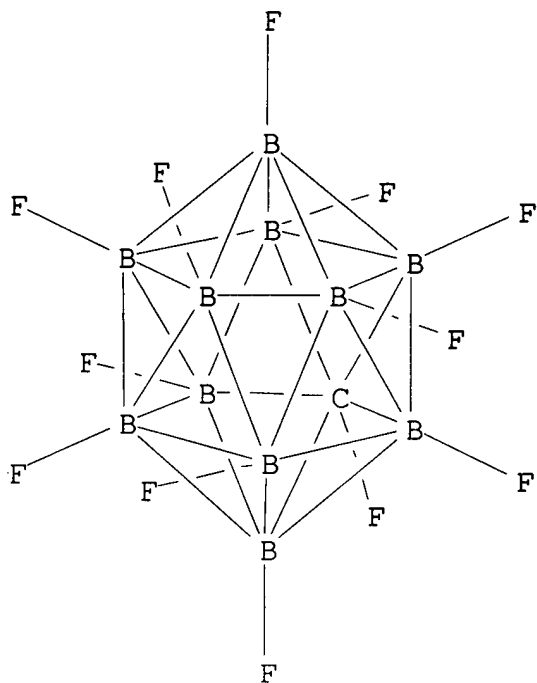
RN 160568-32-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)



RN 213553-27-6 HCA

CN 1-Carbadodecaborate(1-), dodecafluoro- (9CI) (CA INDEX NAME)



RN 213553-30-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexafluoro-1,2,3,4,5,6-hexahydro-, cesium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

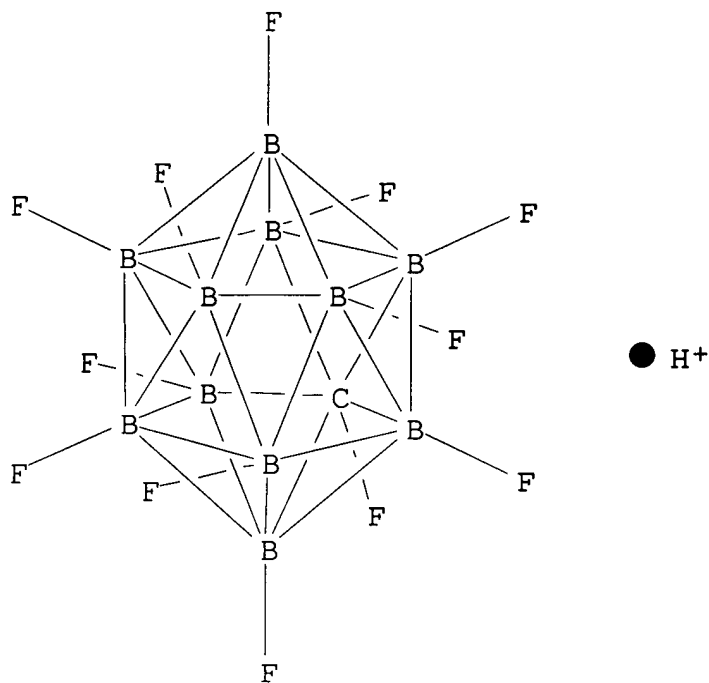
RN 278796-65-9 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexafluoro-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 278796-66-0 HCA

CN 1-Carbadodecaborate(1-), dodecafluoro-, hydrogen (9CI) (CA INDEX NAME)



RN 278796-67-1 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 278796-68-2 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexakis(cyano-.kappa.C)-1,2,3,4,5,6-hexahydro-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

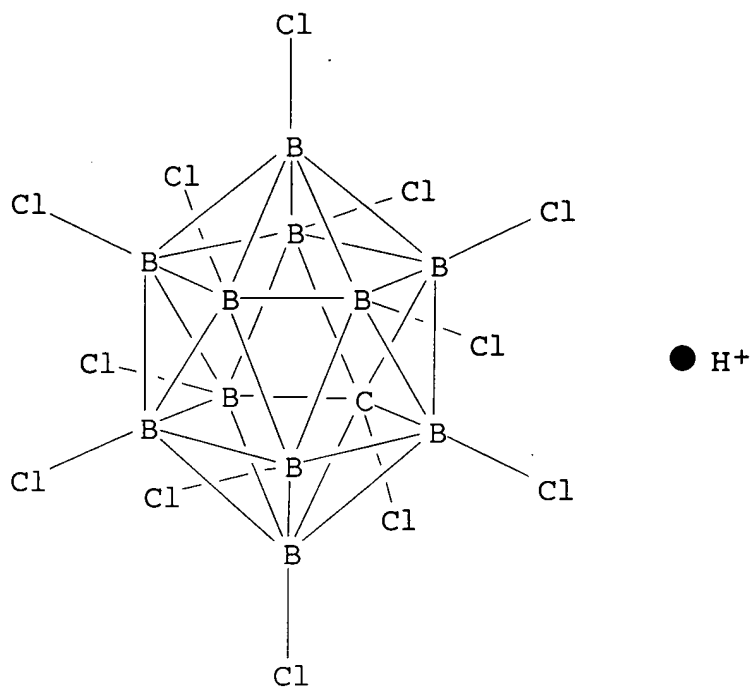
RN 278796-69-3 HCA

CN 1-Carbadodecaborate(1-), 1,2,3,4,5,6-hexahydro-7,8,9,10,11,12-hexakis[(trifluoromethyl)sulfonyl]-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

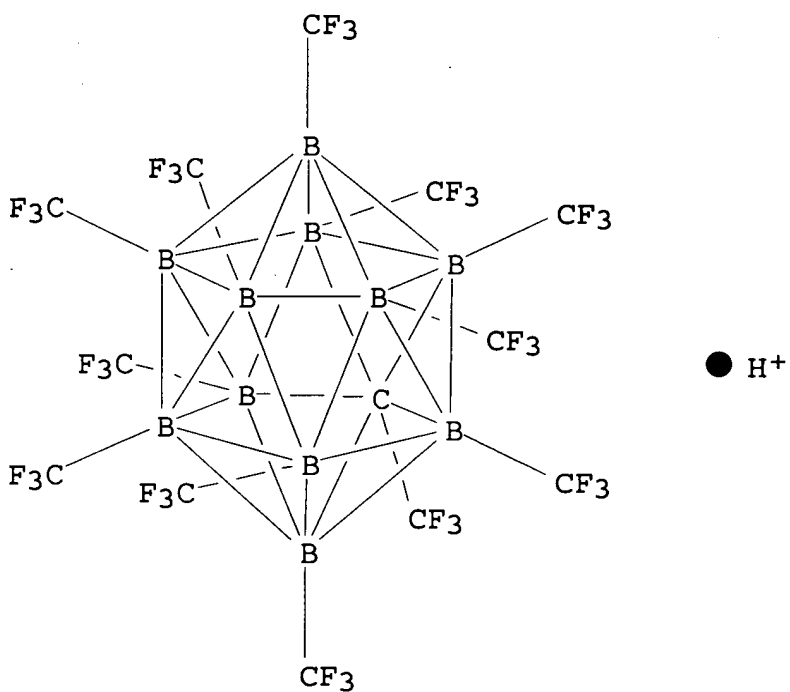
RN 278796-70-6 HCA

CN 1-Carbadodecaborate(1-), dodecachloro-, hydrogen (9CI) (CA INDEX NAME)



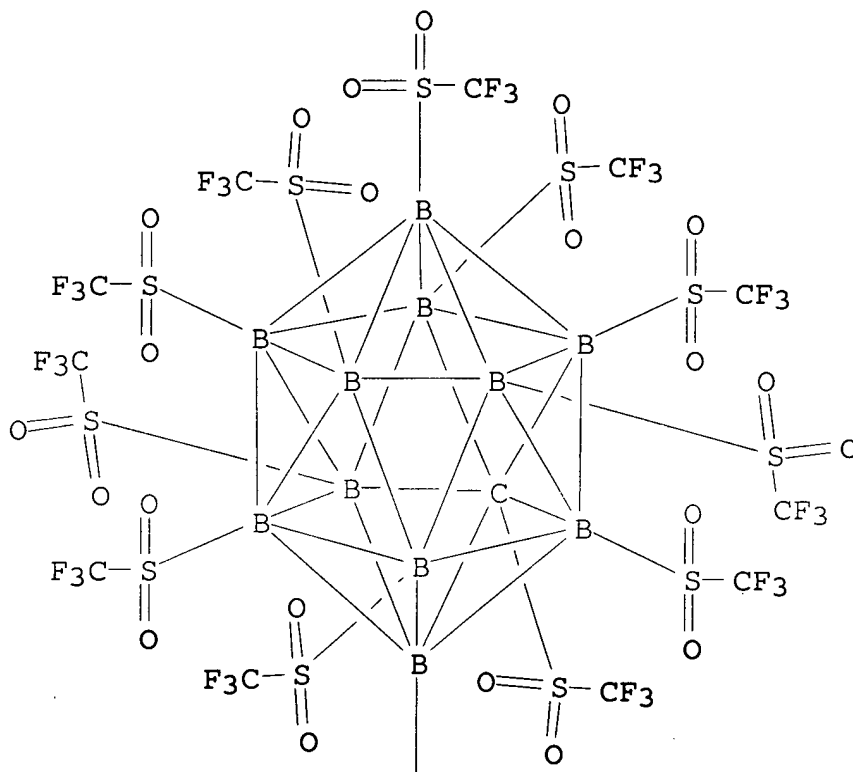
RN 278796-71-7 HCA

CN 1-Carbadodecaborate(1-), dodecakis(trifluoromethyl)-, hydrogen (9Cl)
(CA INDEX NAME)

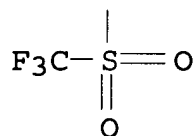


RN 278796-72-8 HCA
 CN 1-Carbadodecaborate(1-), dodecakis[(trifluoromethyl)sulfonyl]-,
 hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

● H⁺

RN 278796-76-2 HCA
 CN 1-Carbadodecaborate(1-), 1,2,3,4,5,6-hexahydro-7,8,9,10,11,12-

hexakis(trifluoromethyl)-, hydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 68-3 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
Section cross-reference(s): 66

ST Bronsted **superacid** gas phase acidity DFT ab initio

IT Ab initio methods
Bronsted acidity
Density functional theory
Free energy
Functional groups
Molecular structure
Statistical analysis
(DFT and ab initio study on gas-phase acidity of Bronsted **superacids**)

IT Bronsted acids
Lewis acids
Zeolites (synthetic), properties
(DFT and ab initio study on gas-phase acidity of Bronsted **superacids**)

IT Protonation enthalpy
(DFT and ab initio study on gas-phase acidity of bronsted **superacids**)

IT Acidity function
(Hammett; DFT and ab initio study on gas-phase acidity of Bronsted **superacids**)

IT Acids, properties
(inorg.; DFT and ab initio study on gas-phase acidity of Bronsted **superacids**)

IT Acidity
(**superacidity**; DFT and ab initio study on gas-phase acidity of bronsted **superacids**)

IT 76-05-1, Trifluoroacetic acid, properties 454-50-2,
Tricyanomethane 517-25-9, Trinitromethane 1493-13-6 2466-09-3,
Diphosphoric acid 2925-25-9, Trifluorothioacetic acid 7601-90-3,
Perchloric acid, properties 7664-93-9, Sulfuric acid, properties
7697-37-2, Nitric acid, properties 7783-05-3, Pyrosulfuric acid
7789-21-1, Fluorosulfonic acid 7790-94-5, Chlorosulfuric acid
10343-62-1, Metaphosphoric acid HPO3 14984-73-7,
Bis(fluorosulfonyl)amine 16872-11-0 16924-28-0, Tantalate(1-),
hexafluoro-, hydrogen 16940-81-1, Phosphate(1-), hexafluoro-,
hydrogen 16950-06-4, Antimonate(1-), hexafluoro-, hydrogen
23854-38-8 32518-14-2, Aluminate(1-), tetrachloro-, hydrogen
42148-23-2, Bis(fluorosulfonyl)methane 45078-17-9, Propene-1,
1,1,2,3,3-pentacarbonitrile 59818-98-3 69239-40-3
73758-08-4 75533-68-5, Methanetrissulfonyl trifluoride
144778-03-0 160568-32-1 189073-27-6
213553-27-6 213553-30-1 278796-64-8
278796-65-9 278796-66-0 278796-67-1

278796-68-2 278796-69-3 278796-70-6

278796-71-7 278796-72-8 278796-76-2

(DFT and ab initio study on gas-phase acidity of bronsted
superacids)

L28 ANSWER 19 OF 34 HCA COPYRIGHT 2006 ACS on STN

133:37255 Reversal of H₂O and OH⁻ Ligand Field Strength on the
Magnetochemical Series Relative to the Spectrochemical Series. Novel
1-equiv Water Chemistry of Iron(III) Tetraphenylporphyrin Complexes.
Evans, Daniel R.; Reed, Christopher A. (Department of Chemistry,
University of California, Riverside, CA, 92521-0403, USA). Journal
of the American Chemical Society, 122(19), 4660-4667 (English) 2000.
CODEN: JACSAT. ISSN: 0002-7863. Publisher: American Chemical
Society.

AB Contrary to expectations based on the spectrochem. series, H₂O is a
significantly weaker field ligand than OH⁻ in the magnetochem.
series ranking of ligand field strengths based on the spin states of
Fe(III) tetraphenylporphyrin complexes. The prepn. and
characterization of the [Fe(H₂O)(TPP)]⁺ ion and the spectroscopic
identification of Fe(OH)(TPP) have made this assessment possible.
These two species were previously thought to be unattainable because
of the facile formation of the known .mu.-oxo dimer,
(TPP)Fe-O-Fe(TPP). However, the special characteristics of single
equiv. of H₂O under high acidity, relevant to metalloenzyme active
sites and **superacidity**, make them accessible in benzene
soln. Their ¹H NMR .beta.-pyrrole chem. shifts at -43 and +82 ppm
indicate admixed-intermediate S = 3/2, 5/2 and high S = 5/2 spin
states for the aqua and hydroxo species, resp. The x-ray crystal
structure of the aqua complex was detd. for
[Fe(H₂O)(TPP)][CB11H₆Cl₆] and is consistent with the high degree of
S = 3/2 character indicated by the NMR measurement, Mossbauer
spectroscopy (.DELTA.Eq = 3.24 mm s⁻¹), and magnetic susceptibility
(.mu.eff = 4.1 .mu.B). The anhyd. precursor to these species is the
nearly bare Fe(III) porphyrin complex Fe(CB11H₆Br₆)(TPP). Judged by
its magnetic parameters (.delta.pyrrole = -62 ppm, .DELTA.Eq = 3.68
mm s⁻¹, .mu.eff = 4.0 .mu.B) it attains the long sought essentially
pure S = 3/2 spin state. The magnetochem. ranking of ligand field
strengths in five-coordinate high-spin and admixed-intermediate-spin
Fe(III) porphyrins is useful because it more closely reflects the
intuitive field strengths of crystal field theory than does the
usual spectrochem. ranking, which is controlled largely by .pi.
effects in octahedral low-spin d⁵ complexes.

IT 273739-02-9P

(prepn. and crystal structure and reaction with water and spin
state)

RN 273739-02-9 HCA

CN Iron, [7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-
carbadodecaborato(1-)-.kappa.Br7][5,10,15,20-tetraphenyl-21H,23H-

porphinato(2-)-.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-,
(SP-5-12)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 273739-03-0P

(prepn. and crystal structure of)

RN 273739-03-0 HCA

CN Iron(1+), aqua[5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-
.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-, (SP-5-12)-,
7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-
carbadodecaborate(1-), monohydrate (9CI) (CA INDEX NAME)

CM 1

CRN 273739-00-7

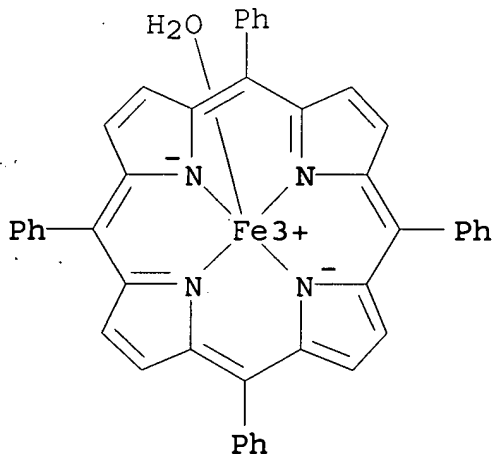
CMF C44 H30 Fe N4 O . C H6 B11 Cl6

CM 2

CRN 273738-99-1

CMF C44 H30 Fe N4 O

CCI CCS

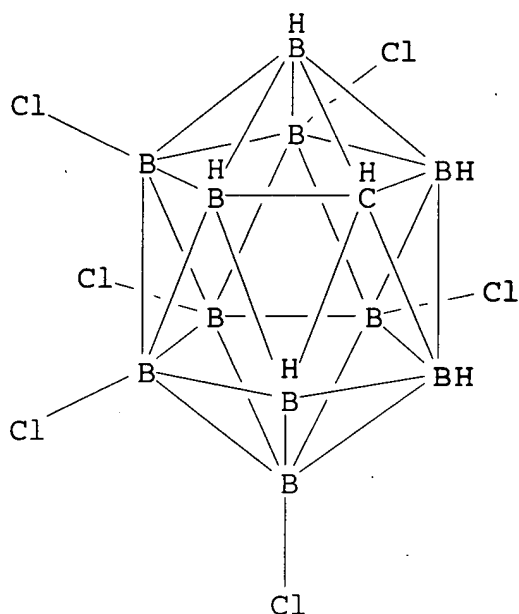


CM 3

CRN 108635-59-2

CMF C H6 B11 Cl6

CCI RIS



IT 273739-00-7P
(prepn. and mol. structure and spin state and Mossbauer spectra
hydrolysis of)

RN 273739-00-7 HCA

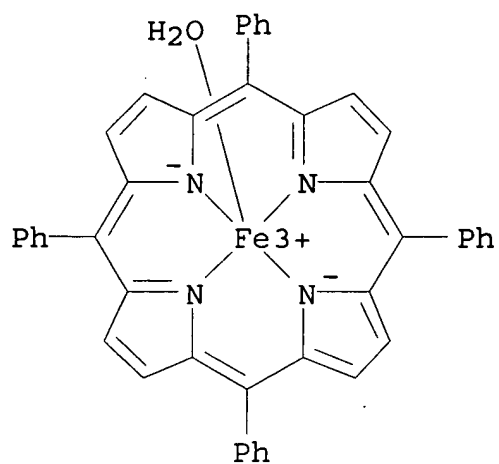
CN Iron(1+), aqua[5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-
.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-, (SP-5-12)-,
7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-
carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 273738-99-1

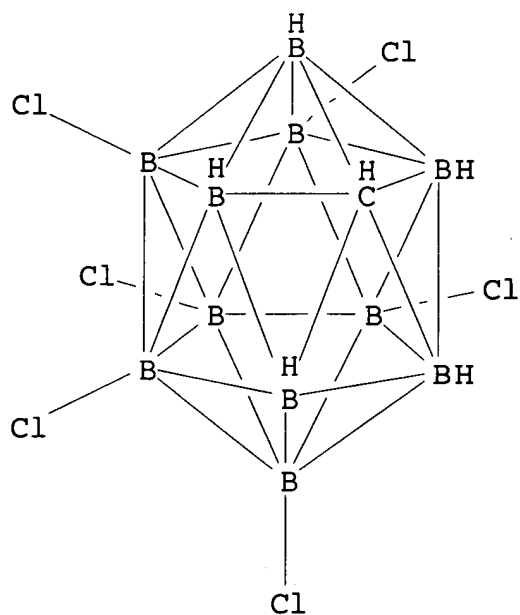
CMF C44 H30 Fe N4 O

CCI CCS



CM 2

CRN 108635-59-2
 CMF C H6 B11 Cl6
 CCI RIS



IT 273738-98-0P

(prepn. and reaction with water and Mossbauer spectra and spin state)

RN 273738-98-0 HCA

CN Iron, [7-(chloro-.kappa.Cl)-8,9,10,11,12-pentachloro-1-carbadodecaborane(12)] [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-, (SP-5-12)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 273739-05-2P

(prepn. and spin state and Mossbauer spectra and hydrolysis)

RN 273739-05-2 HCA

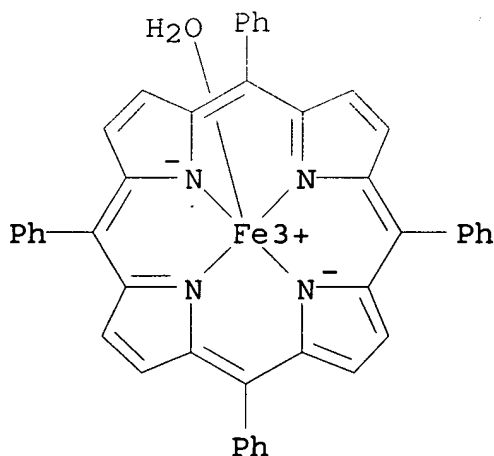
CN Iron(1+), aqua[5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-, (SP-5-12)-, 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 273738-99-1

CMF C44 H30 Fe N4 O

CCI CCS

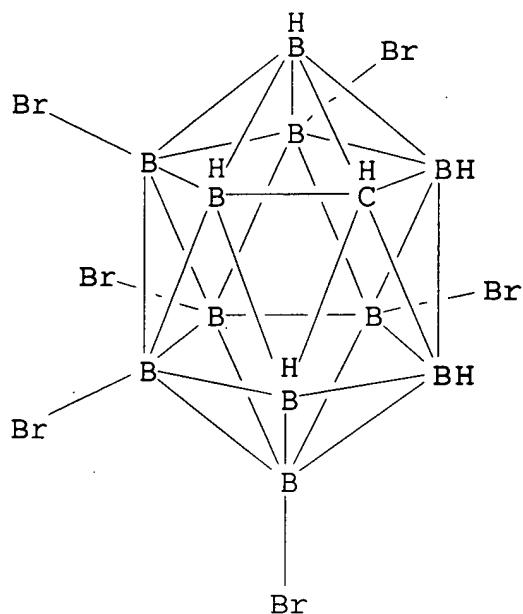


CM 2

CRN 108674-23-3

CMF C H6 B11 Br6

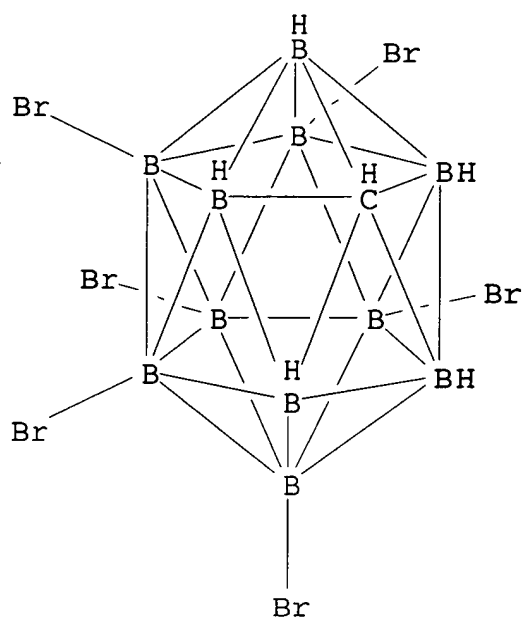
CCI RIS



IT 273739-04-1P
(prepn. of)
RN 273739-04-1 HCA
CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-
hexahydro-, salt with 4-bromo-N,N-bis(4-bromophenyl)benzenamine
(1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 108674-23-3
CMF C H6 B11 Br6
CCI RIS

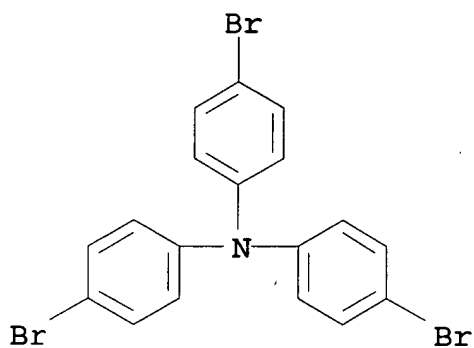


CM 2

CRN 37881-41-7

CMF C18 H12 Br3 N

CCI RIS

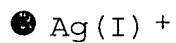
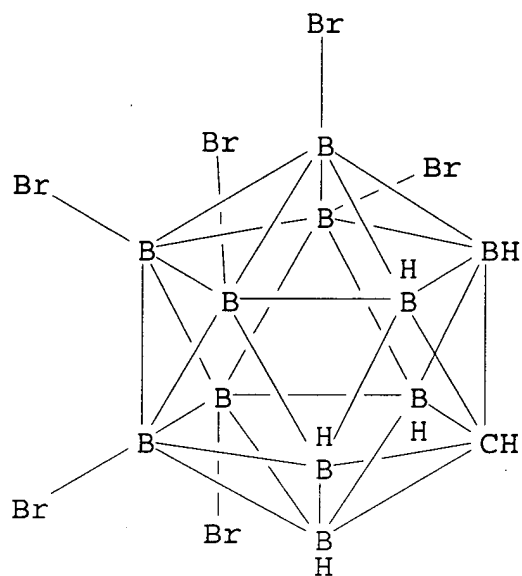


IT 121919-80-0 175476-42-3

(reactant for prepn. of iron porphyrin halocarborane complexes)

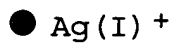
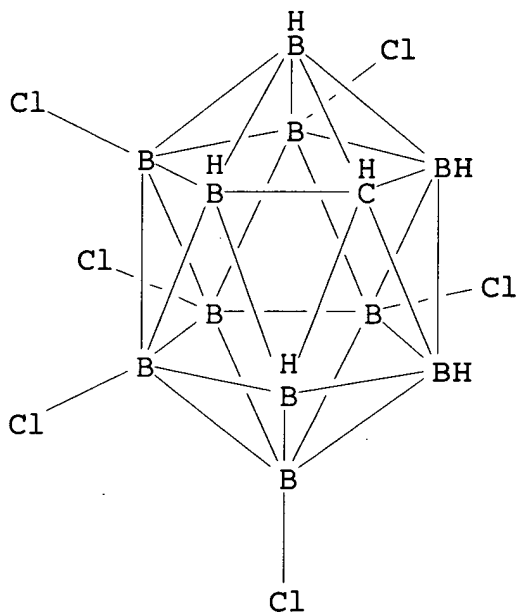
RN 121919-80-0 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexabromo-1,2,3,4,5,6-hexahydro-, silver(1+) (9CI) (CA INDEX NAME)



RN 175476-42-3 HCA

CN 1-Carbadodecaborate(1-), 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-, silver(1+) (9CI) (CA INDEX NAME)



- CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 73, 75, 77
- IT 273739-02-9P
(prepn. and crystal structure and reaction with water and spin state)
- IT 273739-03-0P
(prepn. and crystal structure of)
- IT 273739-00-7P
(prepn. and mol. structure and spin state and Mossbauer spectra hydrolysis of)
- IT 273738-98-0P
(prepn. and reaction with water and Mossbauer spectra and spin state)
- IT 273739-05-2P
(prepn. and spin state and Mossbauer spectra and hydrolysis)
- IT 193334-21-3P 273739-04-1P
(prepn. of)
- IT 121919-80-0 175476-42-3
(reactant for prepn. of iron porphyrin halocarborane complexes)

L28 ANSWER 20 OF 34 HCA COPYRIGHT 2006 ACS on STN

- 132:108046 Synthesis and Structural Characterization of Novel Organolanthanide Clusters Containing Amido and Imido Groups. Wang, Shaowu; Yang, Qingchuan; Mak, Thomas C. W.; Xie, Zuwei (Department of Chemistry, The Chinese University of Hong Kong, Hong Kong). Organometallics, 18(26), 5511-5517 (English) 1999. CODEN: ORGND7. ISSN: 0276-7333. OTHER SOURCES: CASREACT 132:108046. Publisher: American Chemical Society.
- AB Treatment of $\text{Me}_2\text{Si}(\text{C}_9\text{H}_7)(\text{C}_2\text{B}_{10}\text{H}_{11})$ with 4 equiv. of NaNH_2 in THF, followed by reaction with 1 equiv. of LnCl_3 at room temp., afforded $[(\eta^5\text{-C}_9\text{H}_6\text{SiMe}_2\text{NH})\text{Ln}]_2(\mu_3\text{-Cl})(\text{THF})_2(\mu_4\text{-NH})\cdot n\text{OC}_4\text{H}_8$ ($n = 1$, $\text{Ln} = \text{Gd}$ (Ia), Er (Ib); $n = 0$, $\text{Ln} = \text{Dy}$ (Ic)), which represent not only the first examples of organometallic clusters contg. a central μ_4 -imido group but also the first organolanthanide indenyl clusters to be reported. Another type of tetranuclear cluster, $[(\eta^5\text{-C}_9\text{H}_6\text{SiMe}_2)_2\text{N}](\mu_2\text{-NH}_2)\text{Ln}_2(\text{THF})_2[\mu_3\text{-Cl}][\mu_2\text{-Cl}]\cdot\text{THF}$ ($\text{Ln} = \text{Gd}, \text{Y}$), was obtained if the above reactions were carried out at reflux temp. This type of cluster can also be prepd. by refluxing cluster type I in THF in the presence of NaCl. Treatment of $\text{Me}_2\text{Si}(\text{C}_9\text{H}_7)(\text{C}_2\text{B}_{10}\text{H}_{11})$ with 8 equiv. of NaNH_2 in THF, followed by reaction with 1 equiv. of LnCl_3 at room temp., gave the trinuclear clusters $[(\eta^5\text{-C}_9\text{H}_6\text{SiMe}_2)_2\text{N}][\mu_2, \mu_2\text{-Me}_2\text{Si}(\text{NH})_2](\eta^5\text{-C}_9\text{H}_6\text{SiMe}_2\text{NH})(\mu_2\text{-Cl})_2\text{Ln}_3(\text{THF})_3$ ($\text{Ln} = \text{Gd}, \text{Er}$). These results indicate that NaNH_2 serves as both base and nucleophile in the reactions. The o-carborane can be recovered by sublimation under vacuum. The structures of all tetra- and

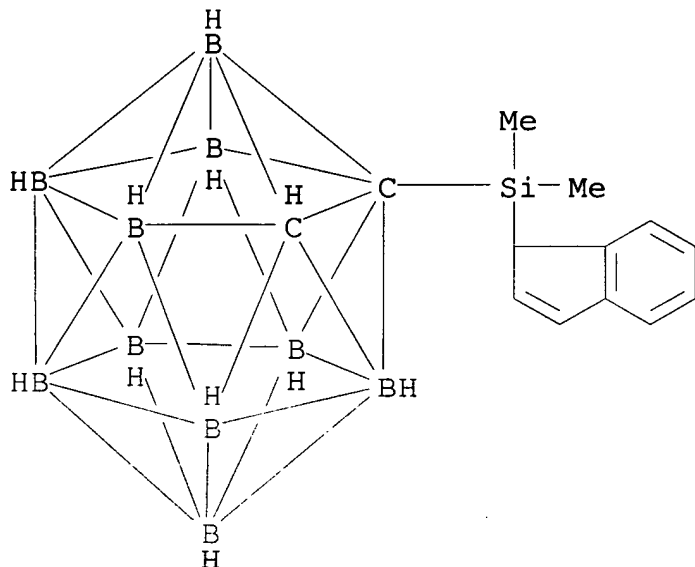
trinuclear clusters were confirmed by single-crystal x-ray analyses.

IT 224428-59-5

(reaction with lanthanide halides)

RN 224428-59-5 HCA

CN 1,2-Dicarbadoecaborane(12), 1-(1H-inden-1-yl)dimethylsilyl)- (9CI)
(CA INDEX NAME)



CC 29-10 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 10025-74-8, Dysprosium trichloride 10138-41-7, Erbium trichloride
10138-52-0, Gadolinium trichloride

(reaction with **carboranyl**(indenyl)silane)

IT 224428-59-5

(reaction with lanthanide halides)

L28 ANSWER 21 OF 34 HCA COPYRIGHT 2006 ACS on STN

131:144630 Isolation of Protonated Arenes (Wheland Intermediates) with
BARF and **Carborane** Anions. A Novel Crystalline

Superacid. Reed, Christopher A.; Fackler, Nathanael L. P.;
Kim, Kee-Chan; Stasko, Daniel; Evans, Daniel R.; Boyd, Peter D. W.;
Rickard, Clifton E. F. (Department of Chemistry, University of
California, Riverside, CA, 92521-0403, USA). Journal of the
American Chemical Society, 121(26), 6314-6315 (English) 1999.

CODEN: JACSAT. ISSN: 0002-7863. OTHER SOURCES: CASREACT

131:144630. Publisher: American Chemical Society.

AB The authors showed how modern anions lead to readily crystd. salts
of remarkable thermal stability. The salt of protonated benzene is
a cryst. **superacid** with distinct advantages over existing
superacid media. The key to the stability of protonated

arene salts lies in the choice of counterion. The authors have had particular success with the **carborane** $\text{CB}_{11}\text{H}_6\text{Cl}_6^-$, one of the most useful members of a newly recognized class of large anions with uncommonly low nucleophilicity and exceptional inertness. Perfluorinated tetraphenylborate ion, $\text{F}_{20}\text{-BPh}_4^-$, was also useful although limited by B-C bond cleavage at higher acidities. Thus, $(\text{Et}_3\text{Si}.\delta^+)(\text{Y}.\delta^-)$ ($\text{Y}^- = \text{CB}_{11}\text{H}_6\text{Cl}_6^-$ (I) or $\text{F}_{20}\text{-BPh}_4^-$) upon treatment with anhyd. HCl and methylated arenes in dry benzene soln. gave salts of protonated methylated arenes which were isolated upon partial removal of the volatiles, addn. of hexanes, and filtration. For hexamethylbenzene, pentamethylbenzene, and mesitylene, resp., the salts $[\text{C}_6\text{Me}_6\text{H}][\text{CB}_{11}\text{H}_6\text{Cl}_6]$, 1, $[\text{C}_6\text{Me}_5\text{H}_2][\text{F}_{20}\text{-BPh}_4]$, 2, $[\text{C}_6\text{Me}_3\text{H}_4][\text{CB}_{11}\text{H}_6\text{Cl}_6]$, 3, and $[\text{C}_6\text{Me}_3\text{H}_4][\text{F}_{20}\text{-BPh}_4]$, 4 were isolated in ca. 60% yields. Reaction of benzene with I proceeded halide abstraction to form $[\text{C}_6\text{H}_7][\text{CB}_{11}\text{H}_6\text{Cl}_6]$, 5. The structures of 1, 2, and 3 have been investigated by x-ray crystallog., but only 2 has an ordered cation.

IT 235429-30-8P

(prepn. and fluxionality of protonated benzene in)

RN 235429-30-8 HCA

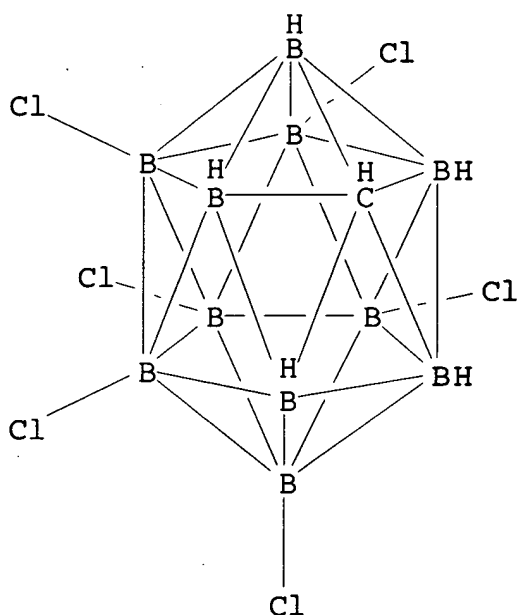
CN Cyclohexadienylum, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

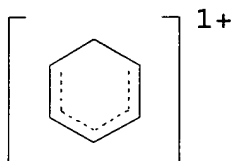
CCI RIS



CM 2

CRN 26812-57-7

CMF C6 H7



IT 235429-26-2P 235429-28-4P

(prepn. of)

RN 235429-26-2 HCA

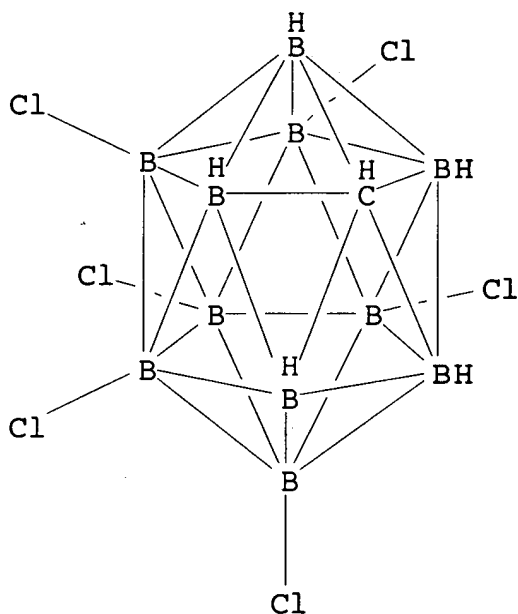
CN Cyclohexadienyl-, 1,2,3,4,5,6-hexamethyl-, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9Cl) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

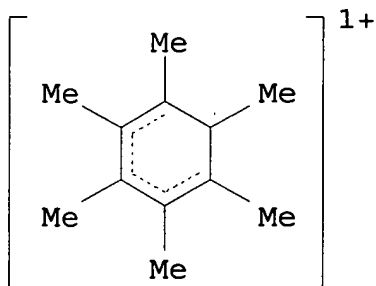
CCI RIS



CM 2

CRN 27458-89-5

CMF C12 H19



RN 235429-28-4 HCA

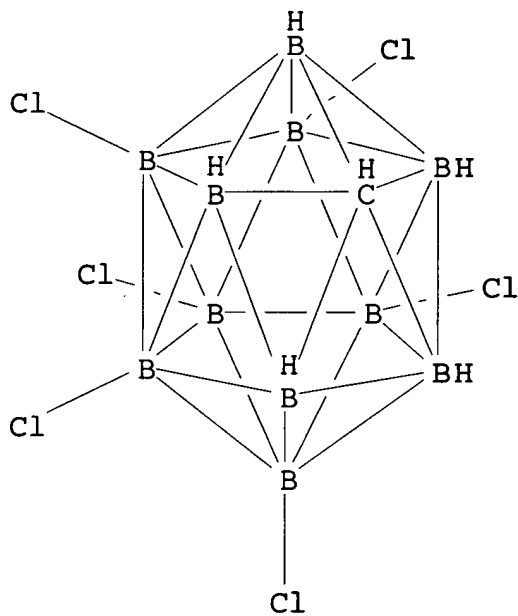
CN Cyclohexadienylum, 1,3,5-trimethyl-, 7,8,9,10,11,12-hexachloro-
1,2,3,4,5,6-hexahydro-1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

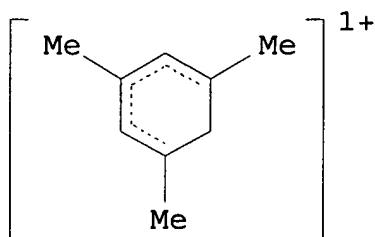
CCI RIS



CM 2

CRN 29631-18-3

CMF C9 H13



IT 235429-31-9

(protonation of arenes in prepn. of exceptionally inert
protonated arenes (Wheland intermediates) with perfluorinated
tetraphenylborate and **carborane** counteranions as novel
cryst. **superacids**)

RN 235429-31-9 HCA

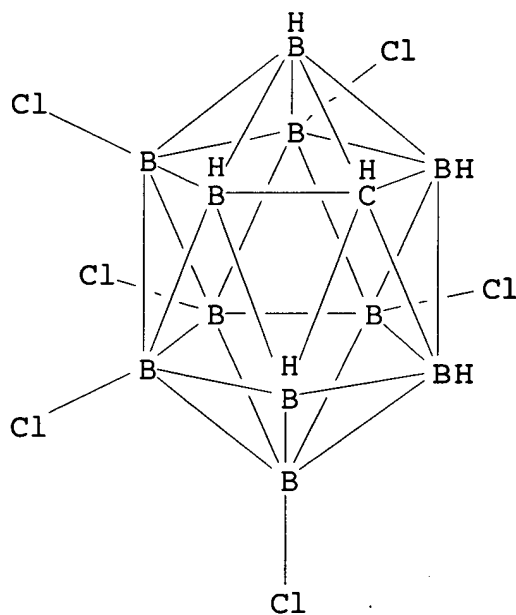
CN Silylium, triethyl-, 7,8,9,10,11,12-hexachloro-1,2,3,4,5,6-hexahydro-
1-carbadodecaborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 108635-59-2

CMF C H6 B11 Cl6

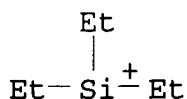
CCI RIS



CM 2

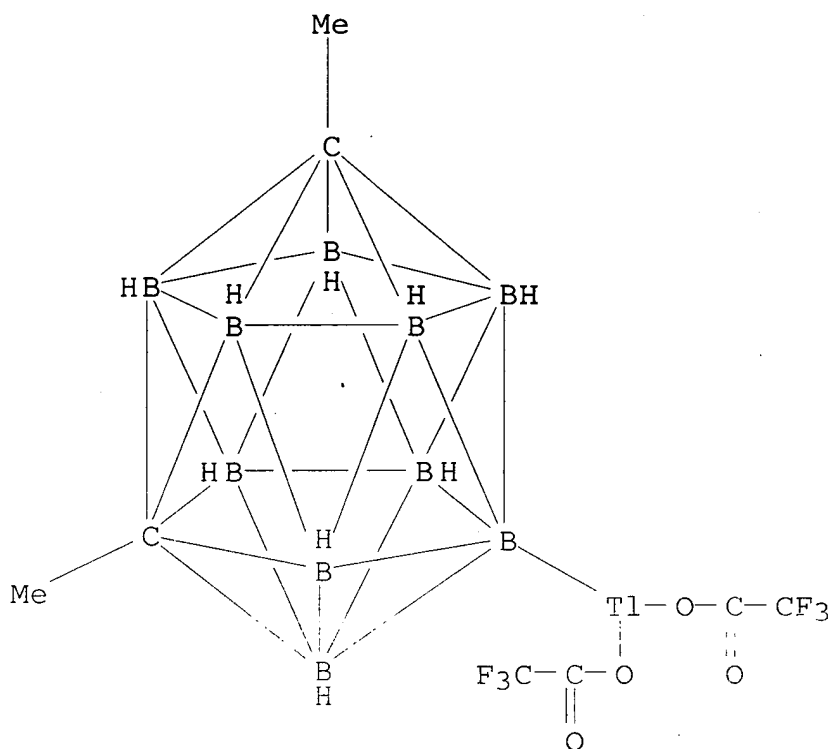
CRN 44564-80-9

CMF C6 H15 Si



- CC 29-4 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 22, 25, 75
- ST protonated arene perfluorinated phenylborate chlorinated **carborane** counterion prepn; crystal structure protonated methylbenzene perfluorinated phenylborate counterion; mol structure protonated methylbenzene perfluorinated phenylborate counterion; Wheland intermediate perfluorinated phenylborate chlorinated **carborane** counteranion prepn structure; crystal superacid protonated arene perfluorinated phenylborate chlorinated **carborane** counteranion; arene protonation silylium perfluorinated phenylborate chlorinated **carborane** counteranion
- IT **Carboranes**
(anions; isolation of protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** anions as novel cryst. **superacids**)
- IT Counterions
(counteranions; exceptional inertness of protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** counteranions as novel cryst. **superacids**)
- IT Nucleophilicity
(exceptional inertness of protonated arenes (Wheland intermediates) with chlorinated **carborane** counteranion with an uncommonly low degree of)
- IT Thermal stability
(exceptional inertness of protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** counteranions as novel cryst. **superacids**)
- IT **Superacids**
(isolation of protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** anions as novel cryst. **superacids**)
- IT Protonation
(of arenes to form Wheland intermediates with perfluorinated tetraphenylborate and **hexachlorocarborane** counterions)

- as novel cryst. **superacids**)
- IT Fluxional rearrangement
(of protonated benzene (Wheland intermediate) with chlorinated **carborane** counteranion studied by NMR)
- IT Aromatic hydrocarbons, preparation
(protonated; exceptional inertness of protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** counteranions as novel cryst. **superacids**)
- IT 235429-30-8P
(prepn. and fluxionality of protonated benzene in)
- IT 235429-26-2P 235429-28-4P 235429-29-5P
(prepn. of)
- IT 71-43-2, Benzene, reactions 87-85-4, Hexamethylbenzene 108-67-8, Mesitylene, reactions 700-12-9, Pentamethylbenzene
(protonation in prepn. of exceptionally inert protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** counteranions as novel cryst. **superacids**)
- IT 148354-27-2, Triethylsilylium tetrakis(pentafluorophenyl)borate 235429-31-9
(protonation of arenes in prepn. of exceptionally inert protonated arenes (Wheland intermediates) with perfluorinated tetraphenylborate and **carborane** counteranions as novel cryst. **superacids**)
- L28 ANSWER 22 OF 34 HCA COPYRIGHT 2006 ACS on STN
- 128:302715 Study of single-electron tunneling through separated molecules by STM. Soldatov, E. S.; Trifonov, A. S.; Gubin, S. P.; Khomutov, G. B. (Mosk. Gos. Univ., Moscow, Russia). Poverkhnost (2), 84-86 (Russian) 1998. CODEN: PFKMDJ. ISSN: 0207-3528. Publisher: Nauka.
- AB The room temp. single-electron transistor based on the single cluster mol. was demonstrated for the 1st time. Scanning tunneling microscope was used to study the transport via the well sepd. **carborane** cluster mols. 1,7-Me₂-1,2-C₂B₁₀H₉Tl(OCOCF₃)₂ incorporated into the Langmuir-Blodgett monolayer of stearic acid. The I-V curves at 300 K show pronounced Coulomb staircase and the current can be controlled by the lithog. fabricated Au gate electrode.
- IT 73041-29-9
(tunneling in single-electron transistor based on single cluster mol. in stearic acid)
- RN 73041-29-9 HCA
- CN Thallium, (1,7-dimethyl-1,7-dicarbadodecaboran(12)-9-yl)bis(trifluoroacetato-.kappa.O)- (9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)

ST single electron transistor **carborane** mol tunneling

IT **73041-29-9**

(tunneling in single-electron transistor based on single cluster mol. in stearic acid)

L28 ANSWER 23 OF 34 HCA COPYRIGHT 2006 ACS on STN

127:88071 Borate photoinitiator from monoborane for photocurable material. Cunningham, Allan Francis; Kunz, Martin; Kura, Hisatoshi (Ciba-Geigy A.-G., Switz.). Ger. Offen. DE 19648256 A1 19970528, 61 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1996-19648256 19961121. PRIORITY: CH 1995-3344 19951124.

AB A photopolymerizable compn. contains the borate photoinitiator $[R_1R_2R_3R_4B]^- \cdot G^+$ or $R_2R_3R_4B-R_1aE^+$ ($R_1, R_2, R_3 = \text{Ph, arom. hydrocarbyl with(out) heteroatom; } R_2 \text{ and } R_3 \text{ may form fused rings; } R_1a = \text{divalent hydrocarbyl, Ph-C1-6-alkylene; } G = \text{pos. ion forming residue; } E = R_21R_22R_23P, R_7R_7aR_8N, R_6R_6aS; R_21, R_22, R_23 = \text{C1-12-alkyl, C2-12-alkenyl, C3-12-cycloalkyl; } R_7, R_7a, R_8 = \text{C1-12-alkyl, C3-12-cycloalkyl, Ph-C1-6-alkyl, Ph; } R_6, R_6a = \text{C1-12-alkyl, Ph-C1-6-alkyl, Ph})$ and a polymerizable ethylenic unsatd. compd. The photoinitiator may be used in coatings, printing inks, printing plates, dental materials, **resist** materials, stereolithog. materials, holog. recording materials, etc.

IT 191876-43-4P

(prepn. of borate photoinitiator from borane)

RN 191876-43-4 HCA

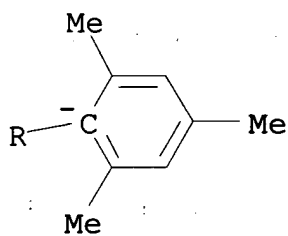
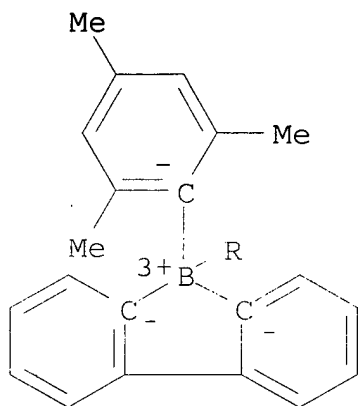
CN Methanaminium, N,N,N-trimethyl-, (T-4)-[1,1'-biphenyl]-2,2'-diylbis(2,4,6-trimethylphenyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 191876-42-3

CMF C30 H30 B

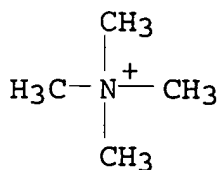
CCI CCS



CM 2

CRN 51-92-3

CMF C4 H12 N



- IC ICM C08F002-46
ICS C08F004-52; C07F005-02; C09J011-06; C08K005-55; C09B069-06;
C09D004-00; C09D201-02; C09D005-46; C09D011-10; A61K006-00;
G03F007-028
- ICA C09D007-12; C09B011-28; C09B023-01; C09B057-00; C09B019-00;
C09B017-00; C09B011-04; C09B021-00
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 29, 35, 42
- IT Dental materials and appliances
Holographic recording materials
Photoimaging materials
Photoresists
(borate photoinitiator from monoborane for photocurable material)
- IT Aminoplasts
(**photoresist** compn.)
- IT 3524-68-3, Sartomer SR444 9003-08-1, Cymel 301 25135-39-1,
Carboset 525 71868-10-5 75081-21-9, Isopropylthioxanthone
104558-94-3, Cyacure UVI 6974
(**photoresist** compn.)
- IT 191420-15-2P 191420-17-4P 191420-33-4P 191420-36-7P
191420-89-0P 191420-93-6P 191420-95-8P 191420-97-0P
191421-00-8P 191421-01-9P 191421-02-0P 191421-03-1P
191421-04-2P 191875-98-6P 191875-99-7P 191876-00-3P
191876-01-4P 191876-02-5P 191876-04-7P 191876-06-9P
191876-07-0P 191876-08-1P 191876-10-5P 191876-12-7P
191876-14-9P 191876-16-1P 191876-18-3P 191876-20-7P
191876-22-9P 191876-24-1P 191876-26-3P 191876-28-5P
191876-30-9P 191876-32-1P 191876-34-3P 191876-36-5P
191876-38-7P 191876-39-8P 191876-40-1P 191876-41-2P
191876-43-4P 191876-44-5P 191876-45-6P 191876-46-7P
191876-47-8P 191876-48-9P 191876-49-0P 191876-50-3P
191876-51-4P 191876-52-5P 191876-53-6P
(prepn. of borate photoinitiator from borane)
- L28 ANSWER 24 OF 34 HCA COPYRIGHT 2006 ACS on STN
120:286494 Heterojunction fabrication by selective area chemical vapor
deposition induced by synchrotron radiation. Byun, Dongjin; Hwang,
Seong-don; Dowben, P. A.; Perkins, F. Keith; Filips, F.; Ianno, N.
J. (Cent. Mater. Res. Anal., Univ. Nebraska, Lincoln, NE,
68588-0111, USA). Applied Physics Letters, 64(15), 1968-70
(English) 1994. CODEN: APPLAB. ISSN: 0003-6951.
- AB The authors have fabricated a B5C/Si(111) heterojunction diode by
the synchrotron radiation-induced decompn. of **orthocarborane**
. This diode can be compared with similar diodes fabricated by
plasma enhanced CVD. The synchrotron radiation induced CVD is
postulated to occur via the decompn. of weakly chemisorbed species

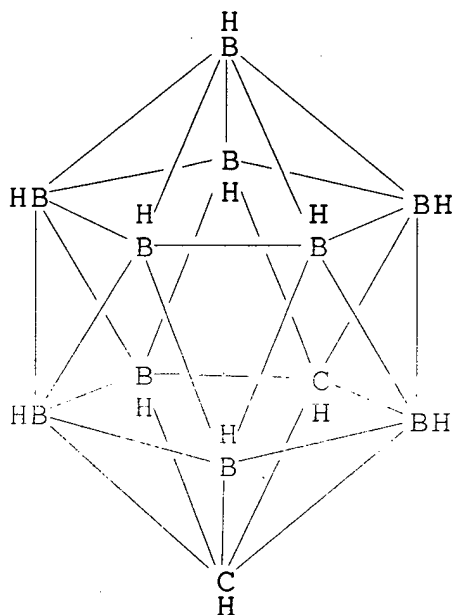
and probably real-time projection **lithog.** (selective area deposition) of B-carbide devices is possible.

IT 16872-09-6, **Orthocarborane**

(synchrotron radiation induced decompn. of, in selective-area CVD of boron carbide on silicon)

RN 16872-09-6 HCA

CN 1,2-Dicarbadoecaborane(12) (8CI, 9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

ST boron carbide selective area CVD; synchrotron radiation induced decompn **orthocarborane**

IT Synchrotron radiation

(decompn. of **orthocarborane** induced by, in diode prepn.)

IT Chemisorbed substances

(**orthocarborane**, synchrotron radiation decompn. of, on silicon)

IT Diodes

(heterojunction, from boron carbide deposition on silicon using synchrotron irradiation of **orthocarborane**)

IT **Lithography**

(projection, real-time, of boron carbide on silicon)

IT 56729-32-9, Boron carbide (B5C)

(selective-area CVD of, on silicon from **orthocarborane** decompn.)

IT 16872-09-6, **Orthocarborane**

(synchrotron radiation induced decompn. of, in selective-area CVD

of boron carbide on silicon)

L28 ANSWER 25 OF 34 HCA COPYRIGHT 2006 ACS on STN

120:90845 Base-developable negative **photoresist** composition.

Babich, Edward D.; Galligan, Eileen A.; Gelorme, Jeffrey D.; McGouey, Richard P.; Nunes, Sharon L.; Paraszczak, Jurij R.; Serino, Russell J.; Witman, David F. (International Business Machines Corp., USA). Eur. Pat. Appl. EP 534204 A1 19930331, 16 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 1992-115167 19920904. PRIORITY: US 1991-766596 19910926.

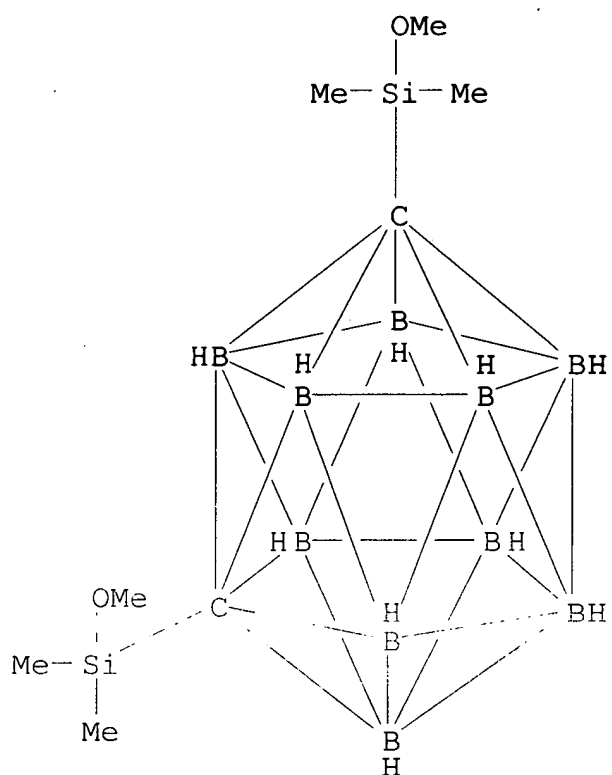
AB A base-developable neg. **photoresist** compn. for providing patterns resistant to O-contg. plasmas comprises a novolak resin and/or poly(p-vinylphenol), an organometallic material contg. functional groups capable of reacting with amino groups, an amino polymer having available reactive amino groups, and a cationic photocatalyst in an amt. effective to initiate crosslinking of the **photoresist** compn.

IT 17631-41-3 22742-19-4, Bis(hydroxydimethylsilyl)-m-carborane

(base-developable neg. **photoresist** compns. contg. novolak resins and, for forming patterns resistant to oxygen plasmas)

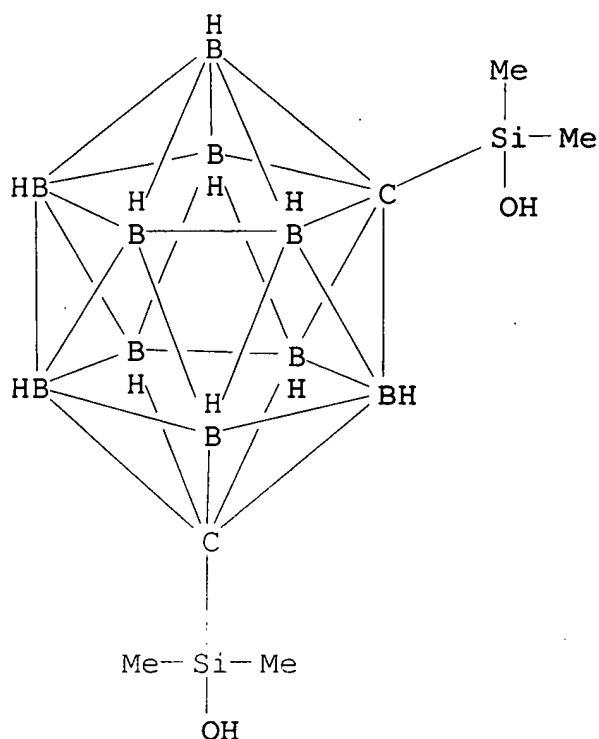
RN 17631-41-3 HCA

CN 1,7-Dicarbadoecaborane(12), 1,7-bis(methoxydimethylsilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 22742-19-4 HCA

CN Silanol, 1,7-dicarbadodecaborane(12)-1,7-diylbis[dimethyl- (9CI)]
(CA INDEX NAME)



- IC ICM G03F007-038
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST neg **photoresist** novolak amino polymer; polyvinylphenol amino polymer neg **photoresist**; organometallic compd neg **photoresist**
- IT Phenolic resins, compounds
(novolak, compds., base-developable neg. **photoresists** contg., for forming patterns resistant to oxygen plasmas)
- IT **Resists**
(photo-, neg.-working, base-developable, contg. novolak resins, organometallic materials, and amino polymers for forming patterns resistant to oxygen plasmas)
- IT 645-05-6, Hexamethylmelamine 3089-11-0,
Hexa(methoxymethyl)melamine 13076-29-4, 1,4-Dimethoxyanthracene 13321-36-3, Di(tert-butyl)silanediol **17631-41-3**
18406-41-2, 1,2-Bis(trimethoxysilyl)ethane **22742-19-4**,
Bis(hydroxydimethylsilyl)-m-carborane 24979-70-2,
Poly(p-vinylphenol) 29036-28-0 57840-38-7 152606-33-2
(base-developable neg. **photoresist** compns. contg. novolak resins and, for forming patterns resistant to oxygen plasmas)
- IT 9016-83-5, Cresol-formaldehyde copolymer

(base-developable neg. photoresists contg.
organometallic compds., amino polymers and, for forming patterns
resistant to oxygen plasmas)

L28 ANSWER 26 OF 34 HCA COPYRIGHT 2006 ACS on STN

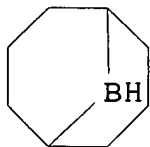
119:139286 trans-Vinylboranes from 9-borabicyclo[3.3.1]nonane through
dehydroborylation. Colberg, Juan C.; Rane, Anil; Vaquer, Jaime;
Soderquist, John A. (Dep. Chem., Univ. Puerto Rico, Rio Piedras,
00931, P. R.). Journal of the American Chemical Society, 115(14),
6065-71 (English) 1993. CODEN: JACSAT. ISSN: 0002-7863. OTHER
SOURCES: CASREACT 119:139286.

AB The hydroboration of 1-alkynes was reinvestigated by ¹¹B NMR under
optimized conditions (THF, 18 h, 0 .degree.C) and found to provide
trans-vinyl-9-BBN adducts together with variable amts. of
1,1-diborylalkanes depending both upon the excess of alkyne employed
and the nature of alkyne substitution. By contrast, the formation
of 1,1-diborylalkanes with 2 equiv of 9-BBN-H is quant. A new
completely stereoselective route to trans-vinyl-9-BBN from
1,1-diborylalkanes was discovered with its reaction with ArCHO in an
electrocyclic process (.rho. = 0.42). While analogous to the
Midland redn., the term dehydroborylation is introduced to emphasize
the olefination aspect of the reaction. 1,1-Diborylethane is
smoothly dehydroborylated at 25 .degree.C with PhCHO following
second-order kinetics. Competitive rate studies reveal its reaction
to be slower than that of Alpineborane, but faster than that of
B-siamyl-9-BBN. The value of the dehydroborylation approach to
vinylboranes and the advantages of using 9-BBN derivs. in
vinylborane reactions are demonstrated with numerous examples.
Thus, 1,8-nonadiyne is converted, through a bis(vinylborane), to
pure trans,trans-1,9-dideuterio-1,8-nonadiene. This transformation
has not been previously possible for 9-BBN-H because of competitive
dihydroboration. The dihydroboration of 1-(triethylsilyl)-1-
propyne, after thermal isomerization and deuterolysis, affords
trans-(3-deuterioallyl)silane, a most remarkable overall conversion.
The insertion of arom. aldehydes into vinylboranes was further
demonstrated to provide a convenient entry to trans-allylic alcs.
The selective oxidn. of vinylboranes with TMANO produces
trans-alkenyl-9-oxa-10-borabicyclo[3.3.2]decanes, which
resist further reaction with ArCHO, oxidn. in the atm., and
protonolysis. A 1-alkyne .fwdarw. 1,1-diborylalkane .fwdarw.
trans-vinyl-9-BBN .fwdarw. trans-stilbenes sequence was employed
without the isolation of trans-vinyl-9-BBN in a one-pot Suzuki
coupling with ArBr to provide trans-stilbenes.

IT 280-64-8, 9-Borabicyclo[3.3.1]nonane
(hydroboration by, of terminal alkynes)

RN 280-64-8 HCA

CN 9-Borabicyclo[3.3.1]nonane (8CI, 9CI) (CA INDEX NAME)



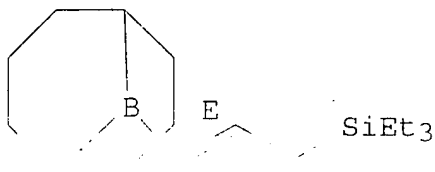
IT 149832-64-4P

(prepn. and deuterolysis of)

RN 149832-64-4 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9-[3-(triethylsilyl)-1-propenyl]-, (E)-
(9CI) (CA INDEX NAME)

Double bond geometry as shown.



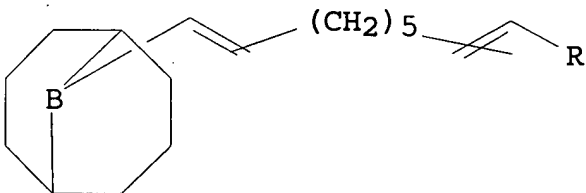
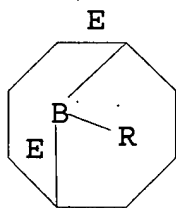
IT 149832-62-2P

(prepn. and protonolysis of)

RN 149832-62-2 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-(1,8-nonadiene-1,9-diyl)bis-,
(E,E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



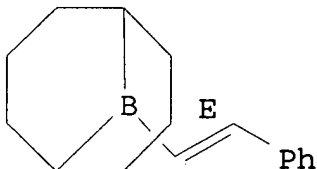
IT 69322-49-2P 149832-54-2P

(prepn. and reactions of)

RN 69322-49-2 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9-(2-phenylethenyl)-, (E)- (9CI) (CA INDEX NAME)

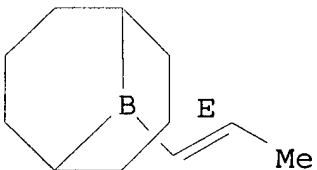
Double bond geometry as shown.



RN 149832-54-2 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9-(1-propenyl)-, (E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

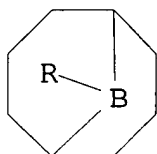
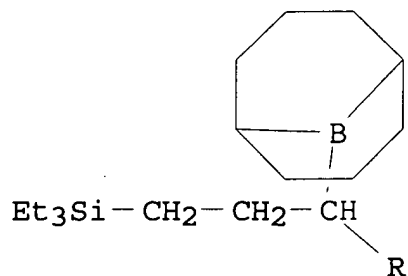


IT 121157-71-9P 149832-61-1P

(prepn. and stereoselective dehydroborylation of)

RN 121157-71-9 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-[3-(triethylsilyl)propylidene]bis- (9CI) (CA INDEX NAME)



RN 149832-61-1 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9',9'',9'''-(1,9-nonanediylidene)tetrakis- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

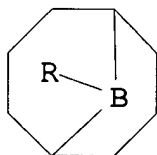
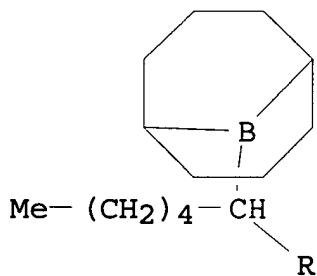
IT 79919-22-5P 121157-70-8P 149832-56-4P

149832-57-5P 149832-58-6P

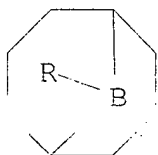
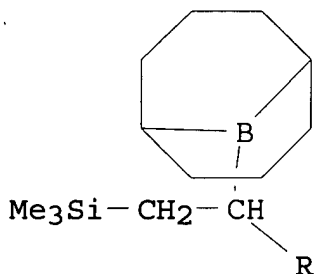
(prepn. and stereoselective dehydroborylation of, with arom. aldehydes)

RN 79919-22-5 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-hexylidenebis- (9CI) (CA INDEX NAME)



RN 121157-70-8 HCA

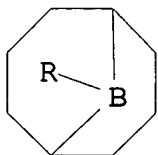
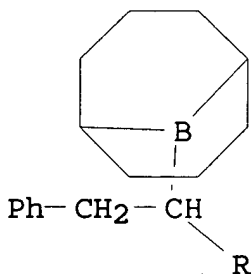
CN 9-Borabicyclo[3.3.1]nonane, 9,9'-[2-(trimethylsilyl)ethylidene]bis-
(9CI) (CA INDEX NAME)

RN 149832-56-4 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-propylidenebis- (9CI) (CA INDEX
NAME)

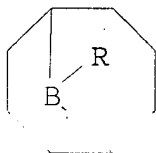
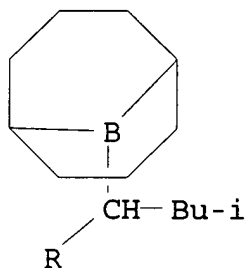
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 149832-57-5 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-(2-phenylethylidene)bis- (9CI) (CA
INDEX NAME)

RN 149832-58-6 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9,9'-(3-methylbutylidene)bis- (9CI) (CA INDEX NAME)



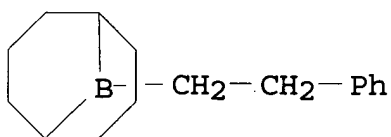
IT 67753-90-6P 69322-45-8P 109297-56-5P

149832-55-3P 149832-59-7P

(prepn. of)

RN 67753-90-6 HCA

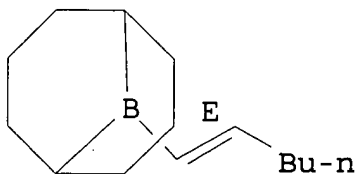
CN 9-Borabicyclo[3.3.1]nonane, 9-(2-phenylethyl)- (9CI) (CA INDEX NAME)



RN 69322-45-8 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9-(1-hexenyl)-, (E)- (9CI) (CA INDEX NAME)

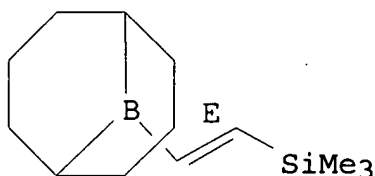
Double bond geometry as shown.



RN 109297-56-5 HCA

CN 9-Borabicyclo[3.3.1]nonane, 9-[(1E)-2-(trimethylsilyl)ethenyl]-
(9CI) (CA INDEX NAME)

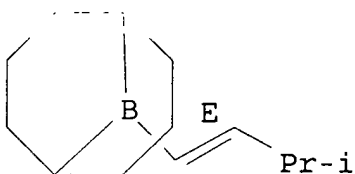
Double bond geometry as shown.



RN 149832-55-3 HCA

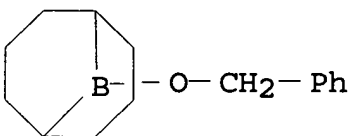
CN 9-Borabicyclo[3.3.1]nonane, 9-(3-methyl-1-butenyl)-, (E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RN 149832-59-7 HCA

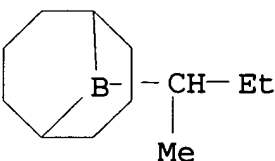
CN 9-Borabicyclo[3.3.1]nonane, 9-(phenylmethoxy)- (9CI) (CA INDEX NAME)



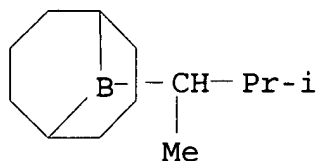
IT 53317-06-9 63942-78-9 73624-47-2
(reaction of, with diborylalkanes)

RN 53317-06-9 HCA

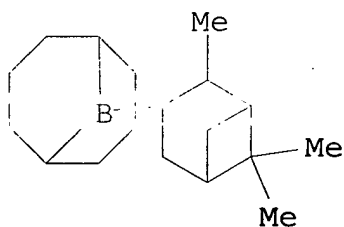
CN 9-Borabicyclo[3.3.1]nonane, 9-(1-methylpropyl)- (9CI) (CA INDEX NAME)



RN 63942-78-9 HCA
 CN 9-Borabicyclo[3.3.1]nonane, 9-(1,2-dimethylpropyl)- (9CI) (CA INDEX NAME)



RN 73624-47-2 HCA
 CN 9-Borabicyclo[3.3.1]nonane, 9-(2,6,6-trimethylbicyclo[3.1.1]hept-3-yl)- (9CI) (CA INDEX NAME)



CC 29-4 (Organometallic and Organometalloidal Compounds)
 IT 280-64-8, 9-Borabicyclo[3.3.1]nonane
 (hydroboration by, of terminal alkynes)
 IT 149832-64-4P
 (prepn. and deuterolysis of)
 IT 149832-62-2P
 (prepn. and protonolysis of)
 IT 69322-49-2P 149832-54-2P
 (prepn. and reactions of)
 IT 121157-71-9P 149832-61-1P
 (prepn. and stereoselective dehydroborylation of)
 IT 79919-22-5P 121157-70-8P 149832-56-4P
 149832-57-5P 149832-58-6P
 (prepn. and stereoselective dehydroborylation of, with arom.
 aldehydes)
 IT 838-95-9P 873-66-5P 1117-91-5P 1694-19-5P 18963-98-9P
 67753-90-6P 69322-45-8P 109297-56-5P
 149832-55-3P 149832-59-7P 149832-60-0P
 149832-66-6P 149832-67-7P 149832-68-8P
 (prepn. of)
 IT 53317-06-9 63942-78-9 73624-47-2
 (reaction of, with diborylalkanes)

L28 ANSWER 27 OF 34 HCA COPYRIGHT 2006 ACS on STN

119:95583 Solution-phase synthesis of boron-rich phosphates. Kane, Robert R.; Lee, Christine S.; Drechsel, Karin; Hawthorne, M. Frederick (Dep. Chem. Biochem., Univ. California, Los Angeles, CA, 90024-1569, USA). Journal of Organic Chemistry, 58(12), 3227-8 (English) 1993. CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 119:95583.

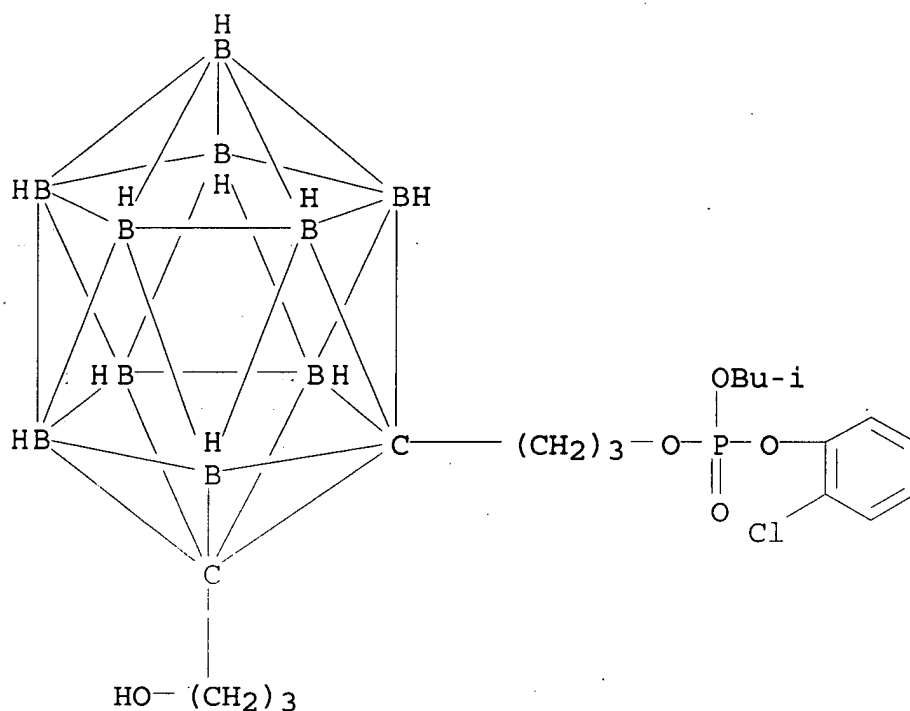
AB Small oligophosphates contg. up to thirty boron atoms were synthesized in a stepwise fashion in soln. The monomeric unit was derived from a readily available **carboranyl** diol. Monoprotection using the tert-butyldimethylsilyl protecting group was followed by condensation of the free OH group with isobutanol using a dichlorophosphite reagent. Oxidn. of the phosphite triester with aq. I₂ in the presence of 2,6-lutidine completed the one pot procedure, affording the phosphate triester in moderate yield. This monophosphate was homologated via acidolytic deprotection of the silyl-masked hydroxyl, followed by repetition of the one-pot condensation/oxidn. step with the monoprotected diol. In this manner, a triphosphate was synthesized. Model studies on the conversion of these neutral compds. to the hydrophilic anionic analogs have been performed on the monophosphate produced in the first coupling. These studies have demonstrated the viability of this approach for the precise synthesis of small boron-rich mols. suitable for use in the antibody mediated boron neutron capture therapy of cancer.

IT 149036-37-3P

(prepn. and condensation of, with monoprotected **carboranyl** diol)

RN 149036-37-3 HCA

CN Phosphoric acid, 2-chlorophenyl 3-[2-(3-hydroxypropyl)-1,2-dicarbadodecaboran(12)-1-yl]propyl 2-methylpropyl ester (9CI) (CA INDEX NAME)

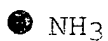
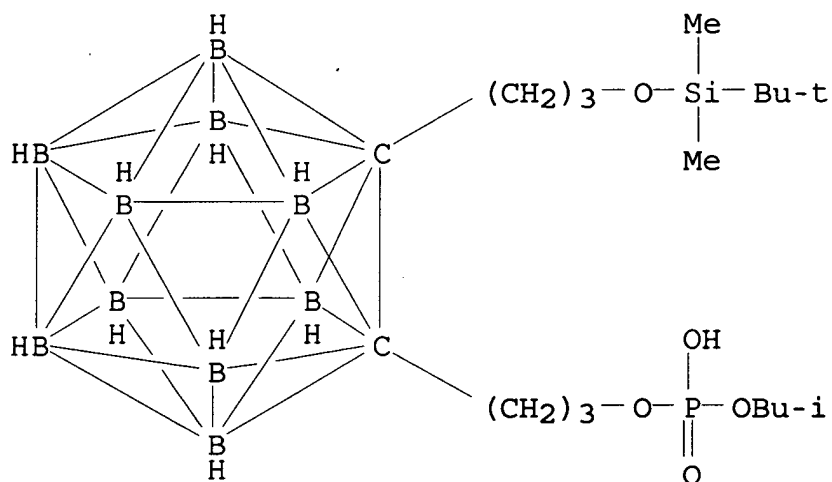


IT 149036-40-8P

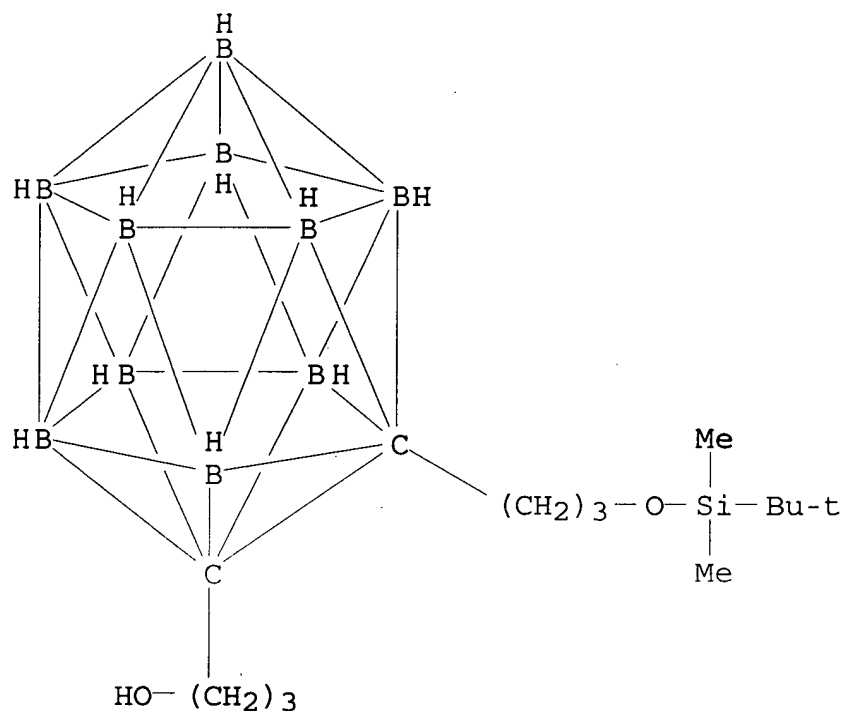
(prepn. and conversion of, to anionic **carboranyl**
phosphate)

RN 149036-40-8 HCA

CN Phosphoric acid, mono[3-[2-[3-[[[(1,1-dimethylethyl)dimethylsilyl]oxy
]propyl]-1,2-dicarbado-dodecaboran(12)-1-yl]propyl]
mono(2-methylpropyl) ester, ammonium salt (9CI) (CA INDEX NAME)



IT 149036-34-0P
 (prepn. and conversion of, to boron-rich oligophosphates)
 RN 149036-34-0 HCA
 CN 1,2-Dicarbadodecaborane(12)-1-propanol, 2-[3-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]propyl]- (9CI) (CA INDEX NAME)



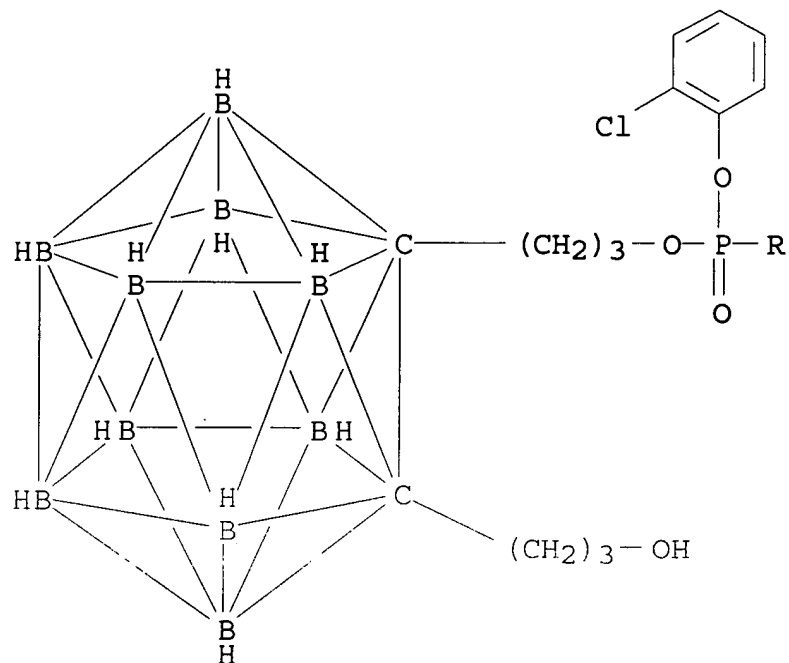
IT 149036-35-1P

(prepn. and coupling reaction of, with monoprotected
carboranyl diol)

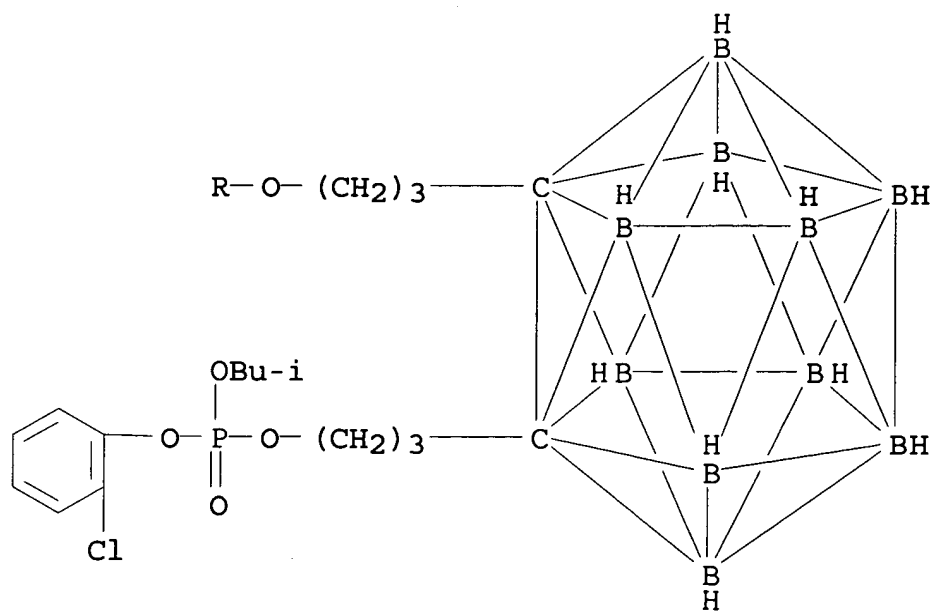
RN 149036-35-1 HCA

CN Phosphoric acid, 2-chlorophenyl 3-[2-[3-[[2-chlorophenoxy] 3-[2-(3-hydroxypropyl)-1,2-dicarbadoecaboran(12)-1-yl]propoxy]phosphinyl]oxy]propyl]-1,2-dicarbadoecaboran(12)-1-yl]propyl 2-methylpropyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

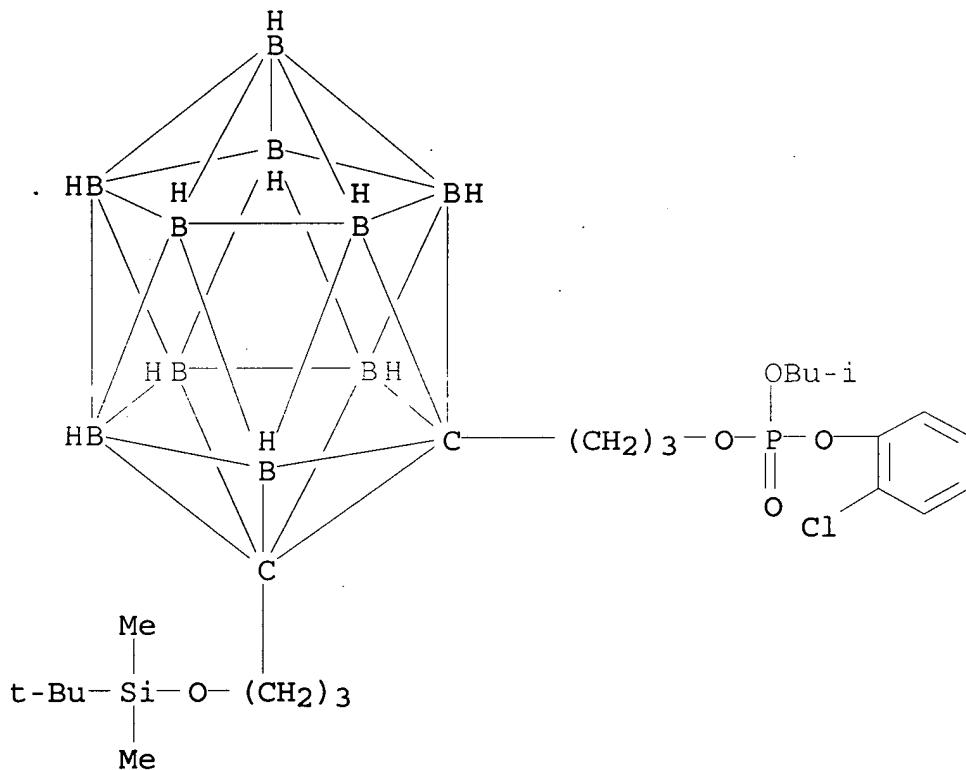


IT 149036-36-2P

(prepn. and reactions of)

RN 149036-36-2 HCA

CN Phosphoric acid, 2-chlorophenyl 3-[2-[3-[[(1,1-dimethylethyl)dimethylsilyl]oxy]propyl]-1,2-dicarbadoecaboran(12)-1-yl]propyl 2-methylpropyl ester (9CI) (CA INDEX NAME)



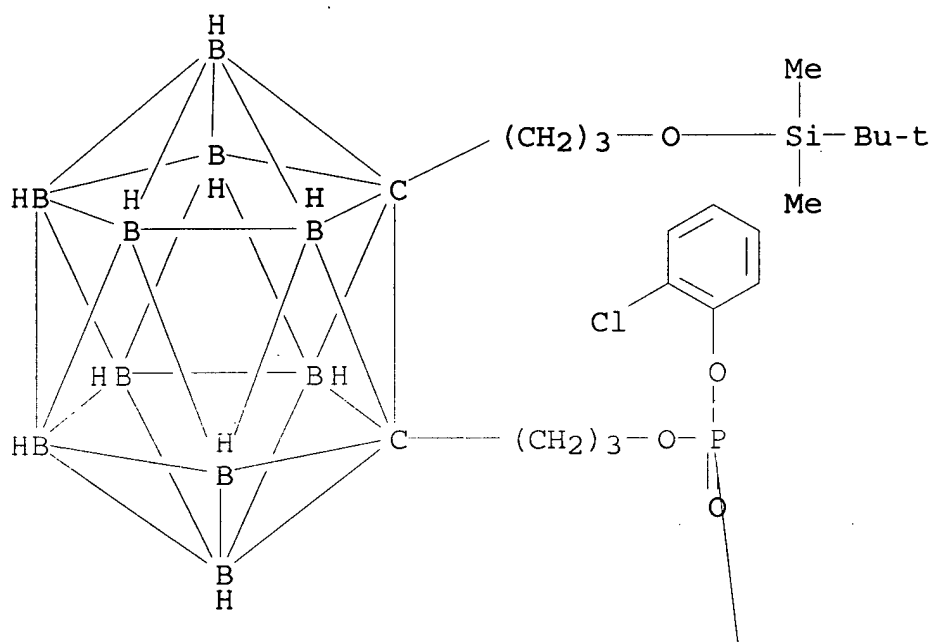
IT 149036-38-4P

(prepn. and sequential deprotection and coupling reaction of)

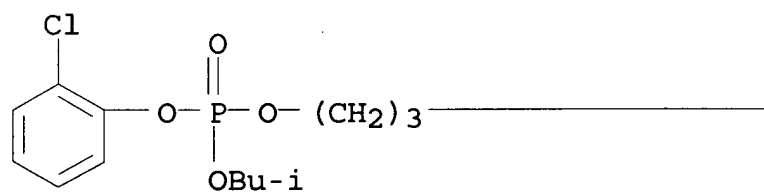
RN 149036-38-4 HCA

CN Phosphoric acid, 2-chlorophenyl 3-[2-[3-[[(2-chlorophenoxy) [3-[2-[3-[[(1,1-dimethylethyl)dimethylsilyl]oxy]propyl]-1,2-dicarbadoecaboran(12)-1-yl]propoxy]phosphinyl]oxy]propyl]-1,2-dicarbadoecaboran(12)-1-yl]propyl 2-methylpropyl ester (9CI) (CA INDEX NAME)

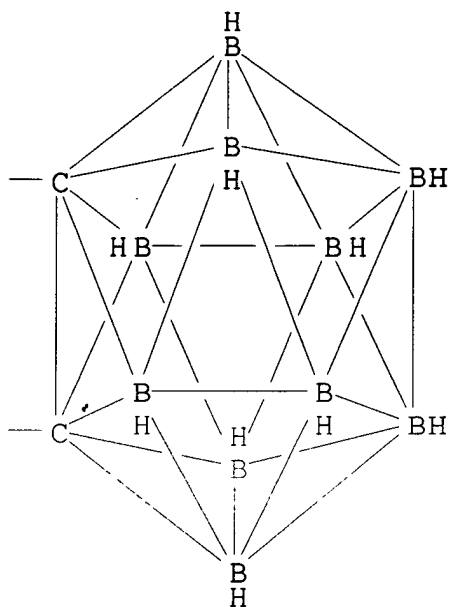
PAGE 1-A



PAGE 2-A



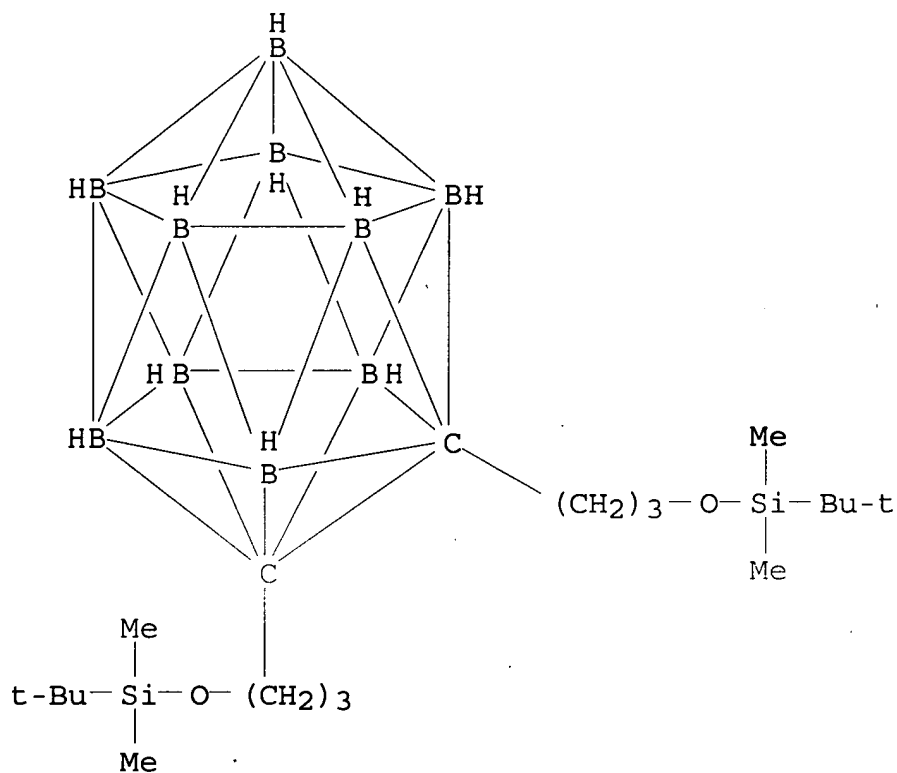
PAGE 2-B



IT 149036-33-9P 149036-39-5P
(prepn. of)

RN 149036-33-9 HCA

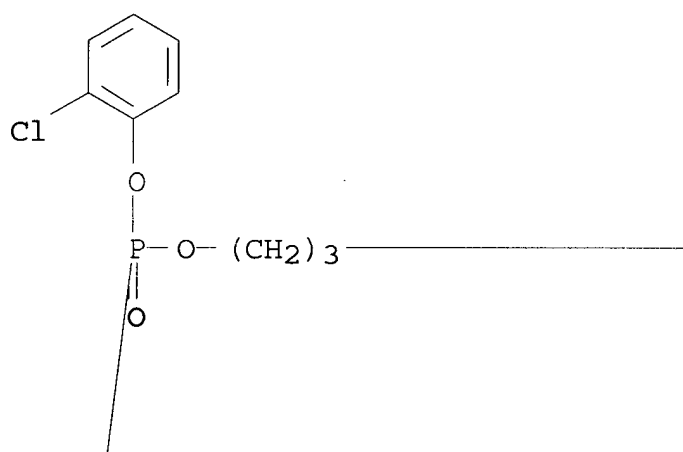
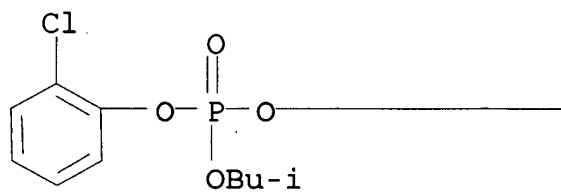
CN 1,2-Dicarbadodecaborane(12), 1,2-bis[3-[[(1,1-dimethylethyl)dimethylsilyl]oxy]propyl]- (9CI) (CA INDEX NAME)



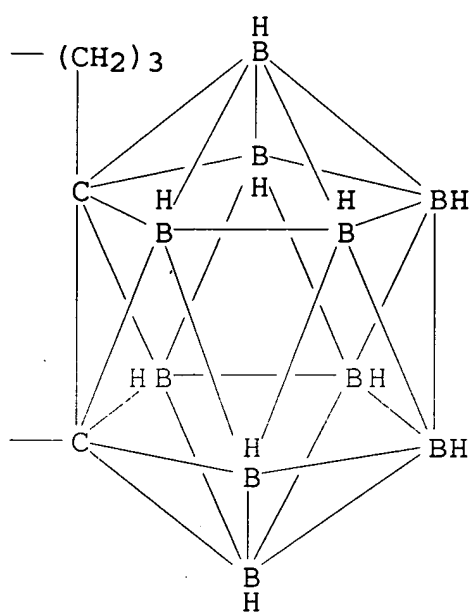
RN 149036-39-5 HCA

CN Phosphoric acid, 2-chlorophenyl 3-[2-[3-[[2-chlorophenoxy] 3-[2-[3-[[1,1-dimethylethyl)dimethylsilyl]oxy]propyl]-1,2-dicarbadodecaboran(12)-1-yl]propoxy]phosphinyl]oxy]propyl]-1,2-dicarbadodecaboran(12)-1-yl]propyl 3-[2-[3-[[2-chlorophenoxy] (2-methylpropoxy)phosphinyl]oxy]propyl]-1,2-dicarbadodecaboran(12)-1-yl]propyl ester (9CI) (CA INDEX NAME)

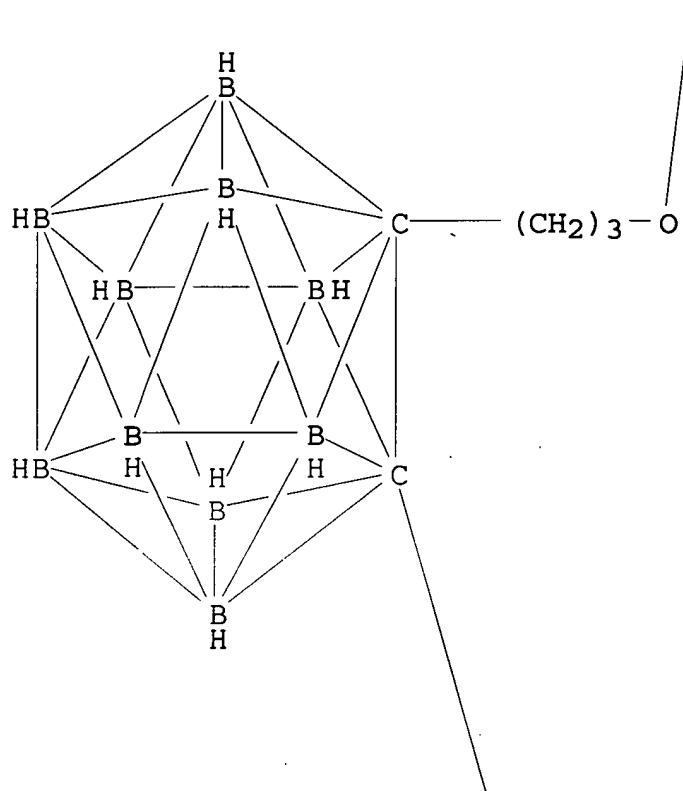
PAGE 1-A



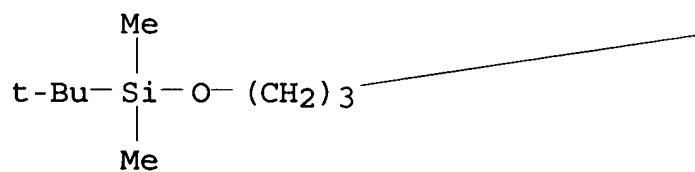
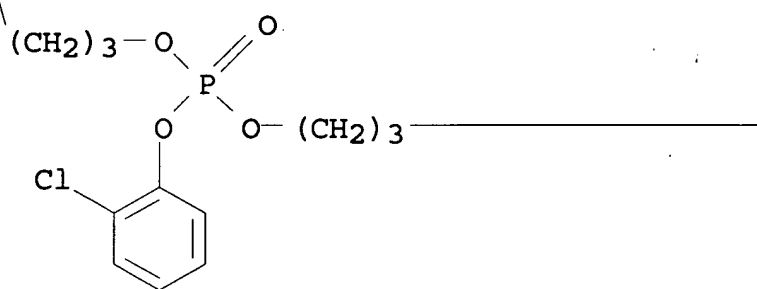
PAGE 1-B



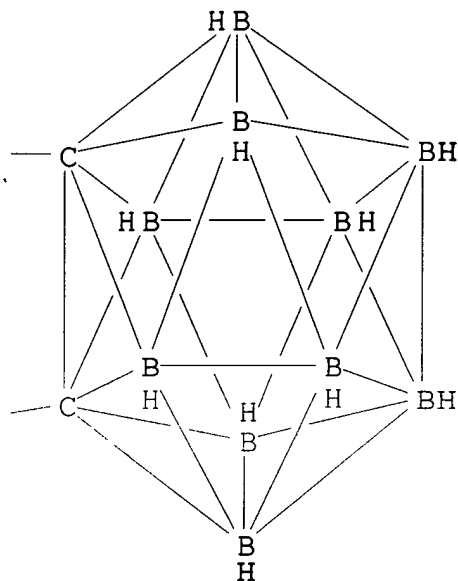
PAGE 2-A



PAGE 3-A



PAGE 3-B

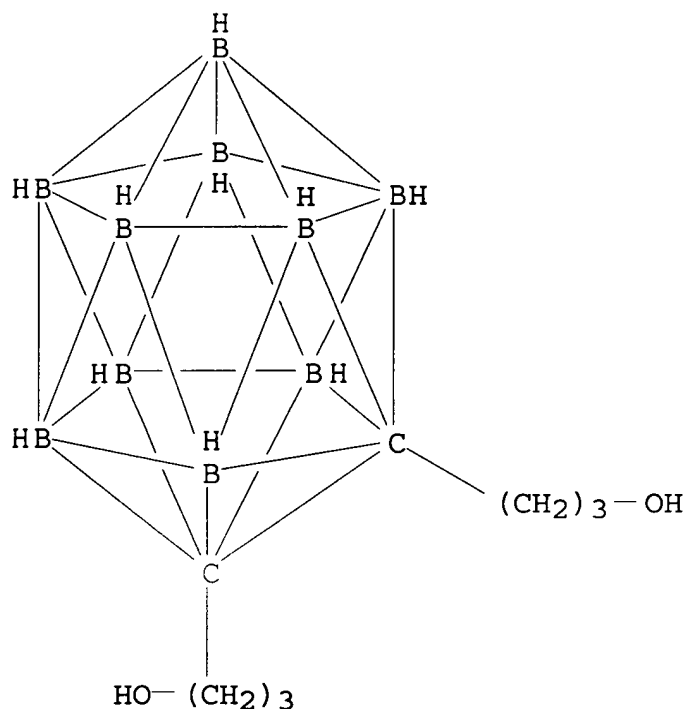


IT 75611-01-7

(reaction of, with tert-butyldimethylsilyl
trifluoromethanesulfonate)

RN 75611-01-7 HCA

CN 1,2-Dicarbado-dodecaborane(12)-1,2-dipropanol (9CI) (CA INDEX NAME)



- CC 29-4 (Organometallic and Organometalloidal Compounds)
 ST boron rich phosphate synthesis; oligophosphate boron rich;
carboranylpropyl phosphate
 IT 149036-37-3P
 (prepn. and condensation of, with monoprotected
carboranyl diol)
 IT 149036-40-8P
 (prepn. and conversion of, to anionic **carboranyl**
 phosphate)
 IT 149036-34-0P
 (prepn. and conversion of, to boron-rich oligophosphates)
 IT 149036-35-1P
 (prepn. and coupling reaction of, with monoprotected
carboranyl diol)
 IT 149036-36-2P
 (prepn. and reactions of)
 IT 149036-38-4P
 (prepn. and sequential deprotection and coupling reaction of)
 IT 148602-25-9P 149036-33-9P 149036-39-5P
 (prepn. of)
 IT 75611-01-7
 (reaction of, with tert-butyldimethylsilyl
 trifluoromethanesulfonate)
 IT 4672-45-1

(sequential reaction of, with monoprotected **carboranyl** diol)

L28 ANSWER 28 OF 34 HCA COPYRIGHT 2006 ACS on STN

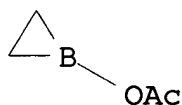
118:30048 Waterless **lithographic** original plates with photosensitive layer containing hydroxyl group-containing polymer and boron compound. Tamura, Kazutaka; Mori, Yoichi (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 04172456 A2 19920819 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-301392 19901106.

AB The original plates are prep'd. by forming a silicone rubber layer and a photosensitive layer contg. a polymer having OH groups in its side chain and an alkanoyloxyboron comp'd. successively on a substrate. The plates can easily be developed and show good adhesion of the silicone rubber layer to the photosensitive layer and printing durability. Thus, a prained Al substrate was coated with a silicone rubber layer and with a compn. contg. Me methacrylate-2-hydroxyethyl methacrylate copolymer, phenyldiacetoxyboron, Aronix M 310 (photopolymerizable monomer), and photoinitiator to give a waterless presensitized **lithog.** plate.

IT **145073-18-3**
(waterless presensitized **lithog.** plate photosensitive layer contg.)

RN 145073-18-3 HCA

CN Borirane, 1-(acetyloxy)- (9CI) (CA INDEX NAME)



IC ICM G03F007-00

ICS G03F007-004

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST waterless presensitized **lithog** plate silicone; boron comp'd presensitized **lithog** plate; hydroxyl polymer presensitized **lithog** plate

IT Siloxanes and Silicones, uses
(acrylic, copolymer with Me methacrylate, waterless presensitized **lithog.** plate photosensitive layer contg.)

IT **Lithographic** plates
(waterless, presensitized, with photosensitive layer contg. hydroxy-contg. polymer and boron comp'd.)

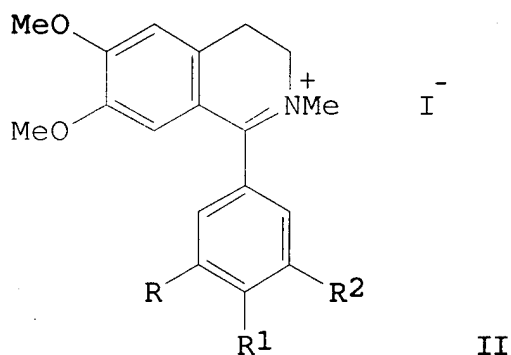
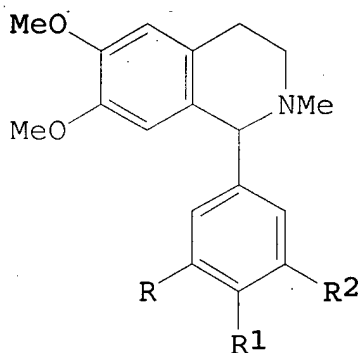
IT 80-62-6D, copolymer with acrylic silicone 10193-99-4,
Pentaerythritol tetrakis(thioglycolate) 24979-70-2,
Poly(p-hydroxystyrene) 26355-01-1, 2-Hydroxyethyl

methacrylate-methyl methacrylate copolymer 100289-84-7, Aronix M
 310 112534-55-1 145073-17-2 **145073-18-3**
 (waterless presensitized **lithog.** plate photosensitive
 layer contg.)

L28 ANSWER 29 OF 34 HCA COPYRIGHT 2006 ACS on STN

113:97865 Enantioselective synthesis of cryptostyline I, II and III via
 asymmetric reduction. Cho, Byung Tae; Han, Cheol Kyu (Dep. Chem.,
 Hallym Univ., Chuncheon, 200-702, S. Korea). Bulletin of the Korean
 Chemical Society, 11(1), 81-2 (English) 1990. CODEN: BKCSDE. ISSN:
 0253-2964.

GI



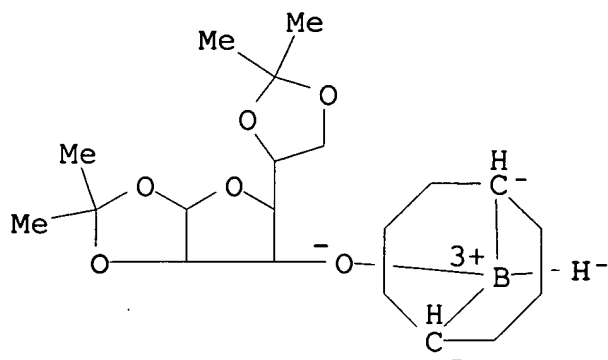
AB The title compds. [(S)-I, R = H, R1R2 = OCH2O, R1 = R2 = MeO; R = R1
 = R2 = MeO] were prepd. by asym. redn. of the isoquinolinium salts
 II with K glucoride, Itsumo's reagent, and **Maskerh's**
 reagent.

IT **101696-41-7**

(asym. redn. by, of Ph isoquinolinium salt)

RN 101696-41-7 HCA

CN Borate(1-), [1,2:5,6-bis-O-(1-methylethylidene)-.alpha.-D-
 glucofuranosato-.kappa.O3]-1,5-cyclooctanediylhydro-, potassium,
 (T-4)- (9CI) (CA INDEX NAME)



● K⁺

CC 31-3 (Alkaloids)

IT 101696-41-7

(asym. redn. by, of Ph isoquinolinium salt)

L28 ANSWER 30 OF 34 HCA COPYRIGHT 2006 ACS on STN

113:58459 The synthesis of (2R)- and (2S)-[2-3H]-propionic acid. Parry, Ronald J.; Turakhia, Rajesh (Dep. Chem., Rice Univ., Houston, TX, 77251, USA). Journal of Labelled Compounds and Radiopharmaceuticals, 28(3), 363-70 (English) 1990. CODEN: JLCRD4. ISSN: 0362-4803. OTHER SOURCES: CASREACT 113:58459.

AB A practical synthesis of (2R)- and (2S)-[2-3H]-propionic acid is described. The key steps in the synthesis are the redn. of [formyl-3H]-3-methoxy-4-mesyloxybenzaldehyde with R- or S-Alpine Borane to (7S)- and (7R)-[7-3H]-3-methoxy-4-mesyloxybenzyl alc. and the use of the vanillyl moiety as a **masked** carboxyl group.

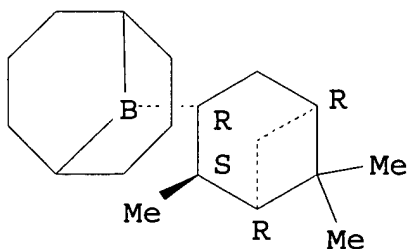
IT 64106-79-2, R-Alpine borane 76695-88-0, S-Alpine borane

(stereoselective redn. by, of tritium-labeled methoxy(mesyloxy)benzaldehyde)

RN 64106-79-2 HCA

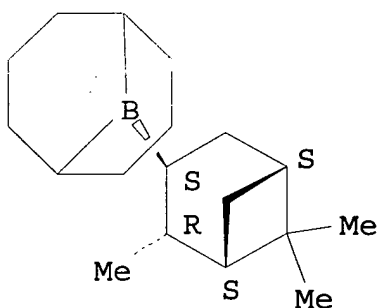
CN 9-Borabicyclo[3.3.1]nonane, 9-[(1R,2S,3R,5R)-2,6,6-trimethylbicyclo[3.1.1]hept-3-yl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 76695-88-0 HCA
 CN 9-Borabicyclo[3.3.1]nonane, 9-[(1S,2R,3S,5S)-2,6,6-trimethylbicyclo[3.1.1]hept-3-yl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 23-16 (Aliphatic Compounds)
 IT 64106-79-2, R-Alpine borane 76695-88-0, S-Alpine borane
 (stereoselective redn. by, of tritium-labeled methoxy(mesyloxy)benzaldehyde)

L28 ANSWER 31 OF 34 HCA COPYRIGHT 2006 ACS on STN
 93:233160 Unusually strong lipophilicity of 'fat' or '**super**' amino **acids**, including a new reference value for glycine. Fauchere, J. L.; Kim Quang Do; Jow, P. Y. C.; Hansch, C. (Dep. Mol. Biol. Biophys., Swiss Fed. Inst. Technol., Zurich, CH-8093, Switz.). Experientia, 36(10), 1203-4 (English) 1980. CODEN: EXPEAM. ISSN: 0014-4754.

AB The hydrophobic parameter of the fat amino acids **carboranylalanine** (I), adamantylalanine (II), methylvaline (III), and methyllleucine (IV) were measured to assess the influence of their lipophilic features on enzyme and receptor binding. All had unusually strong lipophilic properties as revealed by the direct measurement of their partition coeffs. in n-octanol/H₂O or by comparison of chromatog. data. I and II are the most hydrophobic amino acids known. Their side chains are 112- and 31-fold, resp.,

more hydrophobic than the side chain of tryptophan. III is intermediate between methionine and isoleucine, whereas IV is even more lipophilic than phenylalanine. The enormous lipophilicities of I and II should compensate for steric hindrance in binding to hydrophobic recognition sites of enzymes and receptors.

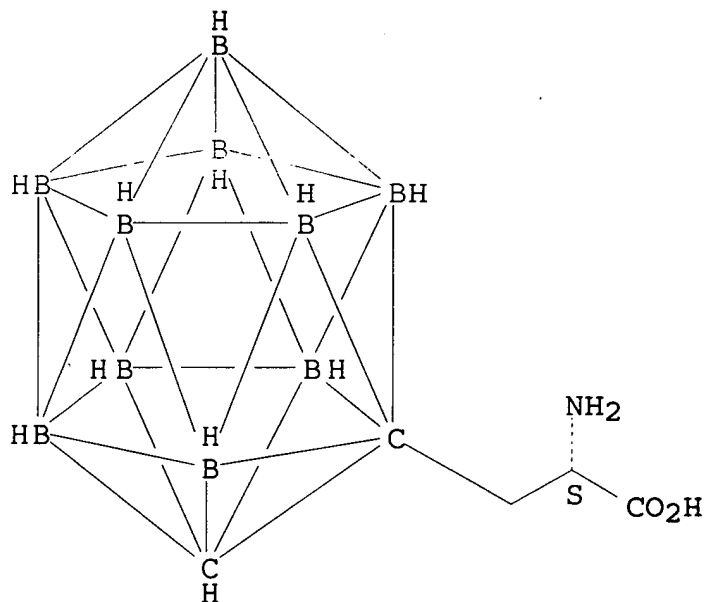
IT 61216-60-2

(lipophilicity of side chains of)

RN 61216-60-2 HCA

CN 1,2-Dicarbododecaborane(12)-1-propanoic acid, .alpha.-amino-, (S)-
(9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 6-3 (General Biochemistry)

ST amino acid lipophilicity; **carboranylalanine** lipophilicity;
adamantylalanine lipophilicity; methylvaline lipophilicity;
methyllleucine lipophilicity

IT 20859-02-3 57224-50-7 61216-60-2 70873-69-7
(lipophilicity of side chains of)

L28 ANSWER 32 OF 34 HCA COPYRIGHT 2006 ACS on STN

77:89365 Polysiloxane copolymers derived from the **carborane**
-silicon phthalocyanine monomer. Barnes, Robert L.; Block, William
M.; Grafstein, Daniel (Singer Co.). U.S. US 3671489 19720620, 4 pp.
(English). CODEN: USXXAM. APPLICATION: US 1969-885335 19691215.

AB Heat-resistant siloxanes are prep'd. by polymn. of
bis[[2-(hydroxymethyl)-1-o-**carboranyl**
]methoxy][phthalocyaninato(2-)]silicon (I) [35915-73-2]

with alkylchlorosilanes. Refluxing 17.0 g dichloro[phthalocyaninato(2-)]silicon and 39.2 g 1,2-bis(hydroxymethyl)-o-carborane in 4.2 l. PhMe 5 hr gives 26.1 g I. Dropwise addn. of 8 ml H₂O to 20.0 g I, 25.0 ml Me₂SiCl₂, and 11.1 ml Me₃SiCl in 600 ml pyridine over 15 min gives a siloxane which, when coated on glass cloth and cured 2 hr at 200.deg., **resists** crazing for 15 hr at 200.deg.. Polyurethanes are also prepd. from I and isocyanates.

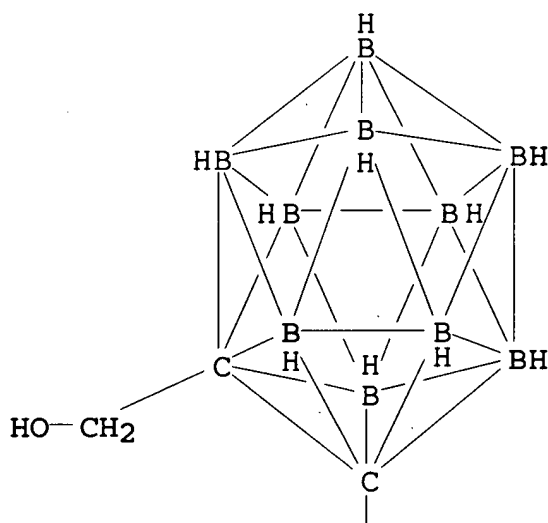
IT 35915-73-2

(in heat-resistant siloxane manuf.)

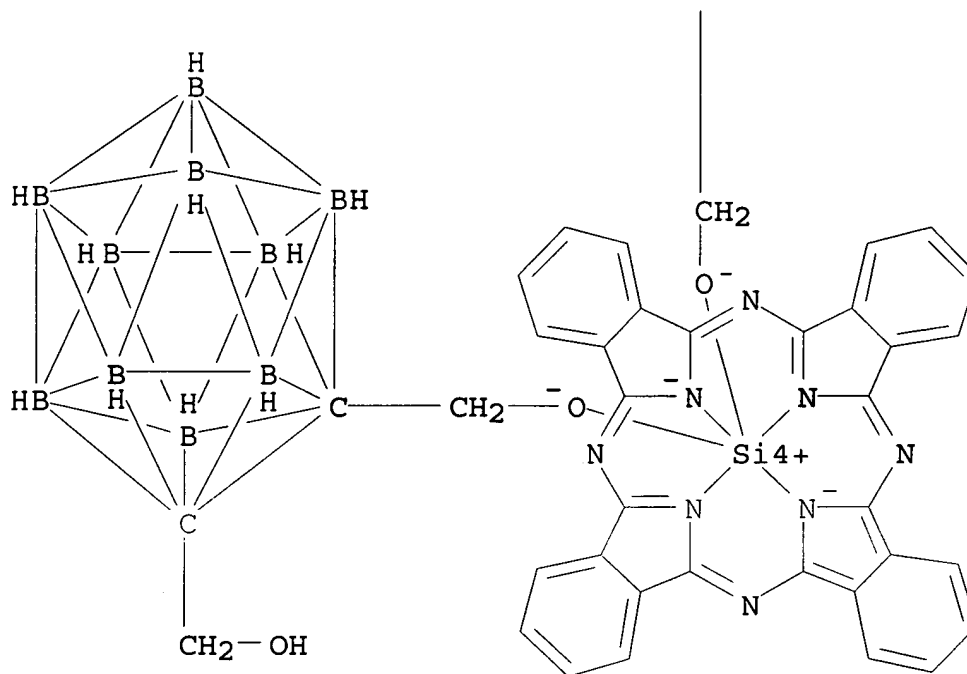
RN 35915-73-2 HCA

CN Silicon, bis(1,2-dicarbadodecaborane(12)-1,2-dimethanolato-.kappa.O) [29H,31H-phthalocyaninato(2-)-.kappa.N29,.kappa.N30,.kappa.N31,.kappa.N32]-, (OC-6-12)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC C08F
 INCL 260046500E
 CC 36-3 (Plastics Manufacture and Processing)
 Section cross-reference(s): 29
 ST siloxane **carborane** phthalocyanine; heat resistance
 siloxane; polyurethane **carborane** phthalocyanine
 IT 35915-73-2
 (in heat-resistant siloxane manuf.)

L28 ANSWER 33 OF 34 HCA COPYRIGHT 2006 ACS on STN

66:46374 Carbodiimides. VI. Preparation of 1,3,4-thiadiazoles with acetylated carbodiimides. Hartke, Klaus; Birke, A. (Univ. Concepcion, Concepcion, Chile). Archives de Pharmacie (Paris), 299(11), 921-6 (German) 1966. CODEN: APHAA6. ISSN: 0365-5466. OTHER SOURCES: CASREACT 66:46374.

GI For diagram(s), see printed CA Issue.

AB cf. CA 66, 46395y. Acetylated carbodiimides form addn. products with thiocarboxylic hydrazides, which could be converted to 2-alkylamino-5-aryl-1,3,4-thiadiazoles (I) by treatment with dil. HCl. The structure of these compds. was proved by uv spectra and the independent synthesis of 2-isopropylamino-5-phenyl-1,3,4-thiadiazole (Ia). Thus, a soln. 10 millimoles carbodiimide and 0.79 g. AcCl in 40 ml. abs. Et₂O was kept overnight, 1.01 g. Et₃N added, 10 millimoles finely powd. thiocarboxylic hydrazide added with

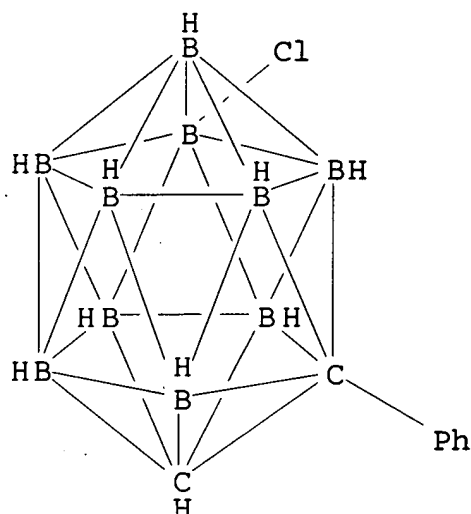
stirring within 5 min., the mixt. stirred 3-4 hrs., Et₂N.HCl filtered off, and the filtrate evapd. to give a yellow oil. Treatment with 20 ml. 15% HCl 2 hrs. in the cold gave the following I (R, R₁, R₂, m.p., and % yield given): Ph, iso-Pr, Ac, 87-8.degree. (ligroine), 68; Ph, Me, Ac, 193-4.degree. (ligroine), 36; 1-naphthyl, 1 iso-Pr, Ac, 128-9.degree. (EtOH-H₂O), 14; 2-furyl, Me, Ac, 193.degree. (EtOH), 54; 2-furyl, iso-Pr, Ac, 137.degree. (EtOH-H₂O), 64. Refluxing the yellow oil with 15% HCl 10 min. gave after filtration and alkalization with NaOH the following I (R, R₁, R₂, m.p., and % yield given): Ph, iso-Pr, H (Ia), 149-50.degree. (ligroine), 71; Ph, Me, H (Ib), 183-4.degree. (EtOH), 62; p-MeOC₆H₄, iso-Pr, H (Ic), 171-2.degree. (EtOH-H₂O), 56; 1-naphthyl, iso-Pr, H (Id), 172-3.degree. (EtOH-H₂O, 97). In the synthesis of Ia and Ib, 2,5-diphenyl-1,3,4-thiadiazole was isolated as a by-product before the addn. of NaOH and in the case of Ic, an unidentified by-product. Id could be isolated without addn. of NaOH. For the independent synthesis of Ia, 18 g. NH₂NH₂.H₂O in 50 ml. EtOH was dropped into 20.2 g. iso-PrNCS at 0.degree. in 30 min. with stirring, and the mixt. kept 1 hr. at room temp., refluxed 30 min., and evapd. in vacuo to give 98% 4-isopropylthiosemicarbazide (II), m. 95-6.degree. (C₆H₆-petr. ether). A mixt. of 13.3 g. II and 10.6 g. freshly distd. PhCHO in 40 ml. EtOH was refluxed 30 min. and evapd. to give 72% benzal deriv. (III) of II, m. 158-9.degree. (ligroine). To an aq. soln. of 5.4 g. FeCl₃.6H₂O was added 2.21 g. finely-powd. III, the mixt. heated 30 min. at 80-90.degree. with stirring, cooled, and filtered, excess NH₄OH added, and the mixt. extd. with CH₂Cl₂ to give 40% Ia. Analogously was prepd. 93% 2-isopropylamino-5-(2-furyl)-1,3,4-thiadiazole, m. 155.degree. (EtOH-H₂O).

IT 23940-27-4P

(prepn. of)

RN 23940-27-4 HCA

CN 1,2-Dicarbadoecaborane(12), 8-chloro-1-phenyl- (7CI, 8CI) (CA INDEX NAME)



CC 28 (Heterocyclic Compounds (More Than One Hetero Atom))
 IT 13431-36-2P 14537-58-7P, Acetamide, N-isopropyl-N-(5-phenyl-1,3,4-thiadiazol-2-yl)- 14537-59-8P 14537-61-2P 14537-62-3P
 14537-63-4P 14537-64-5P 14537-65-6P 14537-68-9P 14537-69-0P
 14729-11-4P **23940-27-4P**
 (prepn. of)

L28 ANSWER 34 OF 34 HCA COPYRIGHT 2006 ACS on STN

61:76675 Original Reference No. 61:13340c-d A new series of organoboranes. V. Some chemistry of cyclic **silylcarboranes**

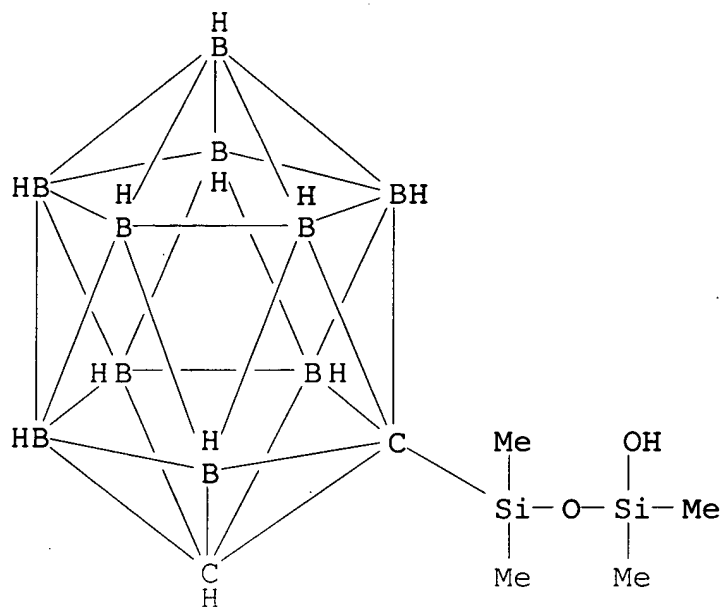
. Papetti, Stelvio; Schaeffer, B. B.; Troscianiec, H. J.; Heying, T. L. (Olin Mathieson Chem. Corp., New Haven, CT). Inorg. Chem., 3(10), 1444-7 (Unavailable) 1964.

AB cf. CA 60, 1782f. When the carbons of **carborane** participate in exocyclic rings, the thermal rearrangement of the ortho **carborane** nucleus to the meta configuration is opposed. These mols. as a whole therefore **resist** degradation at elevated temp. Chem. these compds. are stable under acid conditions, but the Si-**carborane** C bond is attacked by bases. Addnl. types of cyclic silazanes are reported and reactions of some functional groups at the silicon atoms are described.

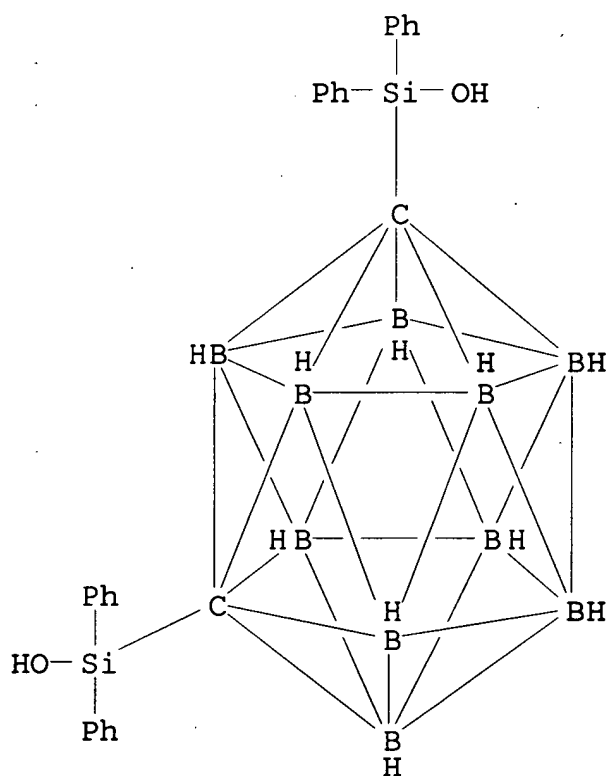
IT **19333-01-8**, Disiloxanol, 3-(1,2-dicarbadoecaboran(12)-1-yl)-1,1,3,3-tetramethyl- **22742-20-7**, Silanol, 1,?-dicarbadoecaborane(12)-C,C'-diyl-bis[diphenyl- (prepn. of)]

RN 19333-01-8 HCA

CN Disiloxanol, 3-(1,2-dicarbadoecaboran(12)-1-yl)-1,1,3,3-tetramethyl- (7CI, 8CI) (CA INDEX NAME)



RN 22742-20-7 HCA

CN Silanol, 1,7-dicarbadodecaborane(12)-1,7-diylbis[diphenyl- (8CI,
9CI) (CA INDEX NAME)

CC 39 (Organometallic and Organometalloidal Compounds)
IT 333-83-5, 1-Oxa-2,5-disilacyclopent-3-ene 875831-23-5,
1-Oxa-2,5,8-trisilacycloocta-3,6-diene
(**carborane** contg.)
IT 333-82-4, 1-Aza-2,5-disilacyclopent-3-ene 6572-34-5,
1,4-Disilacyclohexa-2,5-diene
(**carboranes** contg.)
IT 18025-42-8, 1,2-Dicarbadoecaborane(12), 1,2-
(pentamethyldisilazanylene)- 18025-43-9, 1,2-
Dicarbadoecaborane(12), 1,2-(1,1,3,3-tetramethyl-2-
phenyldisilazanylene)- 19333-00-7, 1,2-Dicarbadoecaborane(12),
1,2-(2-amino-1,1,3,3-tetramethyldisilazanylene)- 19333-01-8
, Disiloxanol, 3-(1,2-dicarbadoecaboran(12)-1-yl)-1,1,3,3-
tetramethyl- 22742-20-7, Silanol, 1,?-
dicarbadoecaborane(12)-C,C'-diyl-bis[diphenyl]-
(prepn. of)

=> d 129 1-16 cbib abs hitstr hitind

L29 ANSWER 1 OF 16 HCA COPYRIGHT 2006 ACS on STN
143:376444 **Photoacid** generators based on novel
superacids. Meagley, Robert P. (USA). U.S. Pat. Appl.
Publ. US 2005221220 A1 20051006, 15 pp. (English). CODEN: USXXCO.
APPLICATION: US 2004-816502 20040331.

AB **Carborane** based **PAG's** are bulky, produce a
strong and large **superacid**, and have polarities that are
compatible with the chem. amplified polymers typically used in
photoresists. **Carborane** based **PAG's**
also provide another broad class of bulky **PAG's** that may
be used in **photoresist** formulations that offer flexibility
in acid strength and polarity through changes in chem. structure.
These **PAG's** may be used with EUV wavelengths, 157 nm, or
193 nm. Resoln. and crit. dimension control may be improved through
the use of **carborane** based **PAG's**.

IC ICM G03C001-492

INCL 430270100

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

ST **photolithog photoacid** generator
superacid

IT **Integrated circuits**

Photolithography

Photoresists

(**photoacid** generators based on novel **superacids**
for)

L29 ANSWER 2 OF 16 HCA COPYRIGHT 2006 ACS on STN

142:463791 **Carborane** acids. New "strong yet gentle" acids for organic and inorganic chemistry. Reed, Christopher A. (Department of Chemistry and Center for S and P Block Chemistry, University of California, Riverside, CA, 92521-0403, USA). Chemical Communications (Cambridge, United Kingdom) (13), 1669-1677 (English) 2005. CODEN: CHCOFS. ISSN: 1359-7345. Publisher: Royal Society of Chemistry.

AB A review. Icosahedral **carborane** anions such as CHB11Cl11- are amongst the least coordinating, most chem. inert anions known. They are also amongst the least basic, so their conjugate acids, H(**carborane**), are **superacids** (i.e. stronger than 100% H2SO4). Acidity scale measurements indicate that H(CHB11Cl11) is the strongest pure Bronsted acid presently known, surpassing triflic and fluorosulfuric acid. Nevertheless, it is also an extremely gentle acid, because its conjugate base engages in so little chem. **Carborane** acids sep. protic acidity from anion nucleophilicity and destructive oxidative capacity in the conjugate base to a degree not previously achieved. As a result, many long-sought, highly acidic, reactive cations such as protonated benzene (C6H7+), protonated C60 (HC60+), tertiary carbocations (R3C+), vinyl cations (R2C:C+-R), silylium ions (R3Si+) and discrete hydronium ions (H3O+, H5O2+ etc.) can be readily isolated as **carborane** salts and characterized at room temp. by x-ray crystallog.

CC 29-0 (Organometallic and Organometalloidal Compounds)

ST review **carborane** acid Bronsted acidity protonation

IT **Carboranes**

(acids; prepn. of **carborane** acids and use as strong yet gentle acids for org. and inorg. chem.)

IT Acids, preparation

(**carborane**; prepn. of **carborane** acids and use as strong yet gentle acids for org. and inorg. chem.)

IT Bronsted acidity

Protonation

(prepn. of **carborane** acids and use as strong yet gentle acids for org. and inorg. chem.)

L29 ANSWER 3 OF 16 HCA COPYRIGHT 2006 ACS on STN

141:387271 Nonlithographic method to produce **masks** by selective reaction, articles produced, and composition for same. Colburn, Matthew E.; Gates, Stephen M.; Hedrick, Jeffrey C.; Huang, Elbert; Nitta, Satyanarayana V.; Purushothaman, Sampath; Sankarapandian, Muthumanickam (International Business Machines Corporation, USA). U.S. Pat. Appl. Publ. US 2004213971 A1 20041028, 20 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-421306 20030423.

AB A method for forming a self aligned pattern on an existing pattern

on a substrate comprising applying a coating of the **masking** material to the substrate; and allowing at least a portion of the **masking** material to preferentially attach to portions of the existing pattern. The pattern is comprised of a 1st set of regions of the substrate having a 1st at. compn. and a 2nd set of regions of the substrate having a 2nd at. compn. different from the 1st compn. The 1st set of regions may include .gtoreq.1 metal elements and the 2nd set of regions may include a dielec. The **masking** material may comprise a polymer contg. a reactive grafting site that selectively binds to the portions of the pattern. The **masking** material may include a polymer that binds to the portions of the pattern to provide a layer of functional groups suitable for polymn. initiation, a reactive mol. having functional groups suitable for polymn. propagation, or a reactive mol., in which reaction of the reactive mol. with the portion of the pattern generates a layer having reactive groups, which participate in step growth polymn.

IC ICM B32B003-00

INCL 428209000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 38, 74

ST semiconductor substrate nonlithog **masking**

IT Polyamides, uses
 Polyanhydrides
 Polybenzimidazoles
 Polybenzoxazoles
 Polycarbonates, uses
 Polycyanurates
 Polyesters, uses
 Polyimides, uses
 Polyoxadiazoles
 Polyoxymethylenes, uses
 Polyphosphazenes
 Polyquinoxalines
 Polysilanes
 Polysiloxanes, uses
 Polysulfides
 Polysulfonamides
 Polysulfones, uses
 Polythiazoles
 Polythioethers
 Polyureas
 Polyurethanes, uses
 Silazanes

(**mask** material; nonlithog. method to produce
masks by selective reaction, articles produced, and
 compn. for same)

IT Coating materials

- (**masking**; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Annealing
Interconnections, electric
Semiconductor device fabrication
(nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT **Carboranes**
(**polycarboranes**, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Imines
(polyimines, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Nitriles, uses
(polynitriles, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Polymers, uses
(polysulfonates, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Conducting polymers
(polythiophenes, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Polymerization
(step-growth; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT Polyesters, uses
(thio-, **mask** material; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT 7440-50-8, Copper, uses
(interconnection; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT 409-21-2, Silicon carbide (SiC), uses 1303-00-0, Gallium arsenide, uses 7440-21-3, Silicon, uses
(substrate; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)
- IT 75-77-4, Trimethylchlorosilane, processes 999-97-3, Hexamethyldisilazane 2754-27-0, Trimethylacetoxysilane 4130-08-9, Vinyltriacetoxysilane 4158-64-9, Hexaphenyldisilazane 13822-56-5, Aminopropyltrimethoxysilane
(surface treatment with; nonlithog. method to produce **masks** by selective reaction, articles produced, and compn. for same)

L29 ANSWER 4 OF 16 HCA COPYRIGHT 2006 ACS on STN

141:287378 Composite sacrificial material. Meagley, Robert P.; Goodner, Michael D. (Intel Corporation, USA). U.S. Pat. Appl. Publ. US 2004183203 A1 20040923, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-393063 20030320.

AB A composite sacrificial material is deposited in a void or opening in a dielec. layer on a semiconductor substrate. The composite sacrificial material includes a polymeric or oligomeric matrix with filler material mixed therein. The filler material may be particulate matter that may be used to modify one or more properties of the composite sacrificial material during semiconductor processing.

IC ICM H01L023-48

ICS H01L021-4763

INCL 257774000; 257751000; 438627000; 257762000; 438687000; 438639000

CC 76-3 (Electric Phenomena)

IT Integrated circuits

Semiconductor device fabrication

(method of depositing composite sacrificial material in voids or openings in dielec. layer on semiconductor substrate)

IT **Carboranes**

Polymers, uses

(particulate filler material; composite sacrificial material including particulate filler material in liq. matrix)

L29 ANSWER 5 OF 16 HCA COPYRIGHT 2006 ACS on STN

139:269380 A monatomic boron ion source. Goldberg, Richard David (Applied Materials, Inc., USA). Brit. UK Pat. Appl. GB 2387022 A1 20031001, 13 pp. (English). CODEN: BAXXDU. APPLICATION: GB 2002-7398 20020328.

AB Initially a plasma supporting gas, such as BF₃ or Ar, is fed to a plasma chamber, allowing a stable plasma to be established. Once the plasma chamber is hot enough, the flow of support gas may be backed off in favor of decaborane powder, which is heated to a temp. at which it sublimates to provide a desired decarborane vapor pressure. It is then fed via conduit, cooled to prevent deposition, to the chamber, where the decaborane vapor dissociates to enrich the monatomic boron content of the plasma. Ions may then be extended through aperture by an electric field formed by electrodes and passed to a magnetic sector mass analyzer in order to select and form a beam of monatomic boron ions (B⁺) for implantation.

IC ICM H01J037-08

CC 76-14 (Electric Phenomena)

IT Dopants

Electric field

Electrodes

Integrated circuits

Ion beams
Ion implantation
Ion sources
Mass spectrometers
Mass spectrometry
Plasma
Sublimation
(monat. boron ion source for ion implantation)

L29 ANSWER 6 OF 16 HCA COPYRIGHT 2006 ACS on STN

136:134851 Group 14 and **carborane** chemistry: from reactive intermediates to materials. Zharov, Ilya (Univ. of Colorado, Boulder, CO, USA). 335 pp. Avail. UMI, Order No. DA9979415 From: Diss. Abstr. Int., B 2001, 61(7), 3601 (English) 2000.

AB Unavailable

CC 29-8 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 35, 76

ST group 14 element chem reactive intermediate; **carborane**
chem reactive intermediate material prepn

IT Conducting polymers
(application of **carborane** chem. to prepn. of conducting polymers)

IT **Carboranes**
Group IVA element compounds
(chem. of, from reactive intermediates to materials)

IT Intermediates
(reactive; of Group 14 element compds. and **carborane** derivs.)

IT **Photoresists**
(study of Group 14 element derivs. and **carborane** chem. to understand processes in bilayer **photoresists**)

L29 ANSWER 7 OF 16 HCA COPYRIGHT 2006 ACS on STN

135:272551 Next generation **superacid**. Kitagawa, Toshikazu; Takeuchi, Kenichi (Graduate School of Engineering, Kyoto University, Japan). Kagaku (Kyoto, Japan), 56(4), 58-59 (Japanese) 2001. CODEN: KAKYAU. ISSN: 0451-1964. Publisher: Kagaku Dojin.

AB The synthesis of a **super acid** having a **carborane** structure, i.e. weakly coordinating anion, and the isolation of fullerene cation in the **super acid** are reviewed with 15 refs.

CC 22-0 (Physical Organic Chemistry)

ST review **superacid carborane** anion fullerene cation

IT Anions
(next generation **superacid**)

IT **Carboranes**
Fullerenes

Superacids(next generation **superacid**)

L29 ANSWER 8 OF 16 HCA COPYRIGHT 2006 ACS on STN

134:318948 Deposition of transition metal carbides by at. layer deposition (ALD). Elers, Kai-Erik; Haukka, Suvi P.; Saanila, Ville Antero; Kaipio, Sari Johanna; Soininen, Pekka Juha (Asm America, Inc., USA). PCT Int. Appl. WO 2001029280 A1 20010426, 23 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-US28537 20001016. PRIORITY: FI 1999-2233 19991015; FI 1999-2234 19991015; FI 1999-2235 19991015; US 1999-PV159799 19991015; US 2000-PV176948 20000118; FI 2000-564 20000310.

AB The present invention relates generally to a method of depositing transition metal carbide thin films. In particular, the invention concerns a method of depositing transition metal carbide thin films by at. layer deposition (ALD), in which a transition metal source compd. and a C source compd. are alternately provided to the substrate. A variety of metal and C source gases are disclosed. The methods are applicable to forming metal carbide thin films in semiconductor fabrication, and particularly to forming thin, conductive diffusion barriers within **integrated circuits** having trench and via openings.

IC C23C016-32; H01L021-00

CC 75-1 (Crystallography and Liquid Crystals)

Section cross-reference(s): 55, 67, 76

IT Alkanes, processes

Carboranes

(deposition of transition metal carbides by ALD using carbon source gas of)

IT Semiconductor device fabrication

(method of producing conductive diffusion barrier in **integrated circuit** by ALD process of metal carbides)

L29 ANSWER 9 OF 16 HCA COPYRIGHT 2006 ACS on STN

133:113449 Nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning. Tonucci, Ronald J.; Pearson, Douglas H. (The United States of America as Represented by the Secretary of the Navy, USA). U.S. US 6087274 A 20000711, 11 pp. (English). CODEN: USXXAM. APPLICATION: US 1998-34310 19980303. PRIORITY: US 1997-PV40015 19970303.

- AB The present invention is a process for making complex structures with nanoscale resoln. in parallel by placing an NCG replica-based **mask** (or other suitable **mask**) in close proximity to a substrate and controlling, with nanoscale accuracy and precision, the relative movement of the **mask** and substrate while sequentially or concurrently carrying out a patterning process or processes. Another aspect of the invention is a diamond film with submicron and/or nanoscale features, that can be made by the method of the invention.
- IC ICM C03C015-00
- INCL 438758000
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 74, 77
- ST shadow glass replica **mask** translation nanostructure patterning
- IT Electron beams
(irradn.; nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT Alloys, uses
Carboranes
Glass, uses
Metallic glasses
Oxides (inorganic), uses
Polymers, uses
(**mask**; nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT Ceramics
Electric conductors
Electric insulators
Electronic device fabrication
Ion implantation
Laser radiation
Membranes, nonbiological
Nanostructures
Photon
Semiconductor materials
Shadow **masks**
Superconductors
(nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT Metals, processes
Polymers, processes
(nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT 7440-44-0D, Carbon, ions, processes
(implantation; nanoscale x-y-z translation of nanochannel glass

- replica-based **masks** for making complex structures during patterning)
- IT 7429-90-5, Aluminum, processes
(**mask** and conductor; nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT 409-21-2, Silicon monocarbide, uses 7439-98-7, Molybdenum, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-33-7, Tungsten, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 12033-89-5, Silicon nitride, uses
(**mask**; nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- IT 7440-21-3, Silicon, processes 7782-40-3, Diamond, processes
(nanoscale x-y-z translation of nanochannel glass replica-based **masks** for making complex structures during patterning)
- L29 ANSWER 10 OF 16 HCA COPYRIGHT 2006 ACS on STN
- 128:140739 Carboranes: A New Class of Weakly Coordinating Anions for Strong Electrophiles, Oxidants, and **Superacids**.
Reed, Christopher A. (Department of Chemistry, University of Southern California, Los Angeles, CA, 90089-0744, USA). Accounts of Chemical Research, 31(3), 133-139 (English) 1998. CODEN: ACHRE4. ISSN: 0001-4842. Publisher: American Chemical Society.
- AB Carborane anions are poised to pass from exotica to specialty chems. of wide research interest. Inert yet functionalizable, they can be tailored to specific applications, many of which await exploration. Their crystallizability and extremely weak coordination has led to the characterization of a no. of unusual cations, particularly those that are inaccessible in traditional **superacid** media because of anion coordination or anion reactivity. Silver(I), thallium(I), trityl, silyl, H⁺(solvent)_x, and electron-abstraction reagents provide a variety of routes to desirable cations with **carboranes** as counterions. Electrophilically added substituents at boron allow new extremes of reactivity to be sampled. Substituent chem. on the carbon atom allows a range of lipophilicity and solvation differences to be manipulated. A review with 64 refs.
- CC 29-0 (Organometallic and Organometalloidal Compounds)
- ST review **carborane** electrophile oxidant **superacid** anion
- IT Electrophiles
Oxidizing agents
(**carboranes** as weakly coordinating anions for strong electrophiles, oxidants, and **superacids**)
- IT **Superacids**
(**carboranes** as weakly coordinating anions for strong electrophiles, oxidants, and **superacids**)

- IT Anions
(org.; **carboranes** as weakly coordinating anions for strong electrophiles, oxidants, and **superacids**)
- IT **Carboranes**
(weakly coordinating anions for strong electrophiles, oxidants, and **superacids**)
- L29 ANSWER 11 OF 16 HCA COPYRIGHT 2006 ACS on STN
127:5435 Polyetherketones from **diarylcaboranes**: a new approach to semi-inorganic polymers. Colquhoun, Howard M.; Lewis, David F.; Daniels, J. Anthony; Herbertson, Penelope L.; MacBride, J. A. Hugh; Stephenson, Ian R.; Wade, Kenneth (Dep. Chem., University Manchester, Manchester, M13 9PL, UK). Polymer, 38(10), 2447-2453 (English) 1997. CODEN: POLMAG. ISSN: 0032-3861. Publisher: Elsevier.
- AB Linear polyetherketones contg. both arom. rings and icosahedral **carborane** (C2B10) cages in the main chain were synthesized by superacid-promoted polycondensation between bis(4-phenoxyphenyl) derivs. of ortho- or meta-**carborane** and arom. or aliph. dicarboxylic acids. Under strictly anhyd. conditions, polymers of high mol. wt. ($M_2 > 150\,000$) were readily obtained. These materials are amorphous and readily sol. in org. solvents, to give solns. from which strong, transparent films may be cast. Poly(**aryletherketonecarborane**)s are characterized by high mass-retention (up to 93%) on thermolysis under nitrogen to 850.degree., and demonstrate extreme resistance to combustion, losing as little as 3% of their mass on pyrolysis at 850.degree. in air. A new type of ionomer, based on the [-C2B9H10-] sub-unit, was obtained by deboronation of poly(**aryletherketone-ortho-carborane**)s under strongly basic conditions.
- CC 35-6 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36
- ST **carborane** polyetherketone prepn condensation combustion resistance; deboronation polyaryletherketone **carborane** ionomer prepn; thermal degrdn resistance polyaryletherketone **carborane**; **superacid** catalyzed polycondensation **aryletherketone carborane**
- IT Polymerization
(electrophilic condensation; prepn. and combustion resistance of polyaryletherketone-**diarylcaborane** semi-inorg. polymers)
- IT **Carboranes**
(polyaryletherketones; prepn. and combustion resistance of polyaryletherketone-**diarylcaborane** semi-inorg. polymers)
- IT Polyketones
Polyketones
(polyether-, **carborane**-group contg.; prepn. and

- combustion resistance of polyaryletherketone-
diarylcarborane semi-inorg. polymers)
- IT Polyethers, preparation
Polyethers, preparation
(polyketone-, **carborane**-group contg.; prepn. and
combustion resistance of polyaryletherketone-
diarylcarborane semi-inorg. polymers)
- IT Fire-resistant materials
(prepn. and combustion resistance of polyaryletherketone-
diarylcarborane semi-inorg. polymers)
- IT Polymerization catalysts
(**superacids**; prepn. and combustion resistance of
polyaryletherketone-**diarylcarborane** semi-inorg.
polymers)
- IT Polymer degradation
(thermal; prepn. and combustion resistance of
polyaryletherketone-**diarylcarborane** semi-inorg.
polymers)
- IT 1493-13-6, Trifluoromethanesulfonic acid
(polycondensation catalyst; prepn. and combustion resistance of
polyaryletherketone-**diarylcarborane** semi-inorg.
polymers)
- IT 135876-26-5P 135899-09-1P
(prepn. and combustion resistance and deboronation of
polyaryletherketone-**diarylcarborane** semi-inorg.
polymers)
- IT 190122-57-7P 190122-58-8P 190122-59-9P 190122-60-2P
190122-61-3P 190122-62-4P 190122-63-5P 190122-64-6P
(prepn. and combustion resistance and deboronation of
polyaryletherketone-**diarylcarborane** semi-inorg.
polymers)
- IT 190122-55-5P, 4,4'-Biphenyldicarboxylic acid-1,7-bis(4-
phenoxyphenyl)-1,7-dicarbadoecaborane copolymer 190122-56-6P
(prepn. and combustion resistance of polyaryletherketone-
diarylcarborane semi-inorg. polymers)
- IT 1643-19-2DP, Tetra-n-butylammonium bromide, salts with deboronated
polyaryletherketone-**diarylcarboranes** 135876-26-5DP,
deboronation products, butylammonium salts 135899-09-1DP,
deboronation products, butylammonium salts
(prepn. of ionomer by partial deboronation of
polyaryletherketone-**diarylcarborane**)
- L29 ANSWER 12 OF 16 HCA COPYRIGHT 2006 ACS on STN
- 123:198021 Accurate calculation of NMR chemical shifts. Gauss, Juergen
(Inst. Physikalische Chemie, Univ. Karlsruhe, Karlsruhe, D-76128,
Germany). Berichte der Bunsen-Gesellschaft, 99(8), 1001-8 (English)
1995. CODEN: BBPCAX. ISSN: 0940-483X. Publisher: VCH.
- AB A review with .apprx.50 refs. An overview over currently available

methods for the calcn. of NMR chem. shifts is given. After a brief discussion of the basis aspects, i.e. definition of the shielding tensor and gauge-origin problem in the calcn. of magnetic properties, recently developed methods for calcg. NMR chem. shifts based on electron-correlated quantum chem. approaches will be discussed. The importance of electron correlation effects for the accurate detn. of abs. shielding consts. and relative shifts is demonstrated and the accuracy of various approaches assessed by a careful comparison with expt., before a few representative applications will be presented. In case of the **carboranes** C₂B₃H₅ and C₂B₃H₇, electron-correlated calcns. were essential to resolve discrepancies between SCF calcns. and expt., while for the vinyl-substituted vinyl cations CH₂=C⁺-CH=CHCH₃ correlated NMR chem. shift calcns.-but not the SCF calcns.-allow the unequivocal assignment of the measured ¹³C signals to the Z and E isomers formed in **superacid** solns. Finally, an outlook with respect to pending problems in the area of NMR chem. shift calcns. is given.

CC 22-0 (Physical Organic Chemistry)
Section cross-reference(s): 29

L29 ANSWER 13 OF 16 HCA COPYRIGHT 2006 ACS on STN

112:244338 Formation of multilayer **circuit** on **integrated** semiconductor device using **carborane**-containing siloxanes as material for interlayer electric insulator. Fukuyama, Shunichi; Oikawa, Akira (Fujitsu Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01300545 A2 19891205 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-130357 19880530.

AB The title circuit is prepd. by using HO[SiR₁2CB₁₀H₁₀CSiR₂2O(SiR₃2O)_n]mH (R₁-3 = H, Me, Et, Pr, iso-Pr, OH, OMe, OEt, OPr, isopropoxy, Ph; m, n > 0) as a material for interlayer elec. insulating film. The resulting interlayer elec. insulating film has a planar surface without cracks. Thus, 1,4-bis(dimethylchlorosilyl)**carborane** and SiCl₂Me₂ were treated to give a siloxane, which was spin-coated onto a Si substrate having the 1st circuit layer, dried, and heated to form a planar surface. A multilayer semiconductor circuit prepd. from the substrate had stable characteristics in heat cycle test.

IC ICM H01L021-90

ICS H01L021-312

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 38

ST multilayer **circuit integrated**; interlayer elec insulating film siloxane; **carborane** siloxane interlayer elec insulator; planarization borosilicate glass interlayer semiconductor

IT Siloxanes and Silicones, uses and miscellaneous
(**carborane**-contg., interlayer elec. insulating layer from, for multilayer semiconductor circuit)

IT Electric insulators and Dielectrics

(coatings, interlayer, for multilayer circuits, borosilicate glass as, **carborane**-contg. siloxanes for)

IT Electric circuits

(**integrated**, interlayer elec. insulator for, borosilicate glass as, **carborane**-contg. siloxanes for)

L29 ANSWER 14 OF 16 HCA COPYRIGHT 2006 ACS on STN

86:180731 Negative **photoresist**. Yurre, T. A.; El'tsov, A. V.; Dushina, V. P.; Orlova, D. N.; Guk, E. G. (Lensovet Technological Institute, USSR). U.S.S.R. SU 544932 19770130 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1977, 54(4), 123. (Russian). CODEN: URXXAF. APPLICATION: SU 1975-2125900 19750415.

AB A neg. **photoresist** is prepd. from a compn. comprised of a **carborane** adipate polyester 6.4-10.5, an epoxidized cyclorubber 3.5-6.4, 2,6-bis(4-azidobenzylidene)-4-methylcyclohexanone 0.64-0.7% and a solvent the balance.

IC G03C001-68

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic Processes)

ST **carborane** adipate polymer neg **photoresist**

IT **Carboranes**

(polymers with adipic acid, neg. **photoresists** contg. epoxidized cyclorubber, bis(azidobenzylidene)methylcyclohexanone and)

IT Rubber, cyclized

(epoxidized, neg. **photoresists** contg. **carborane** adipate polymer, bis(azidobenzylidene)methylcyclohexanone and)

IT **Resists**

(photo-, neg., contg. **carborane** adipate polymer, epoxidized cyclorubber, and bis(azidobenzylidene)methylcyclohexanone)

IT 124-04-9D, polymers with **carboranes**

(neg. **photoresists** contg. epoxidized cyclorubber, bis(azidobenzylidene)methylcyclohexanone and)

IT 5284-79-7

(neg. **photoresists** contg. epoxidized cyclorubber, **carborane** adipate polymer and)

L29 ANSWER 15 OF 16 HCA COPYRIGHT 2006 ACS on STN

85:185555 A new paint-on diffusion source. Beyer, K. D. (Syst. Prod. Div., IBM, Hopewell Junction, NY, USA). Journal of the Electrochemical Society, 123(10), 1556-60 (English) 1976. CODEN: JESOAN. ISSN: 0013-4651.

AB A new paint-on diffusion source was developed from chem. stable polymethylsiloxane resins, BuOAc as a solvent, and dopant compds., such as **carborane** polymers for B, (PhO)3PO for P, and As[OSiPh2O]3As for As. These sources were spun on Si wafers by conventional **photoresist** spinners. O3 at 200.degree. was

used for the decompn. of the sources into doped oxide films. Doped oxide diffusions yielded av. sheet resistances with std. deviations of 1.71% for B and 1.65% for As.

CC 76-13 (Electric Phenomena)

Section cross-reference(s): 65

ST paint diffusion source doping; silicon doping diffusion source; boron silicon doping source; phosphorus silicon doping source; arsenic silicon doping source; **carborane** polymer boron dopant; phenyl phosphate phosphorus dopant; arsenosiloxane arsenic dopant

IT **Carboranes**

(poly-, paint-on diffusion sources contg., for boron doping of silicon)

L29 ANSWER 16 OF 16 HCA COPYRIGHT 2006 ACS on STN

52:3129 Original Reference No. 52:616f-g Gas-mask protection against diborane, pentaborane, and mixtures of boranes. Long, James E.; Levinskas, George J.; Hill, William H.; Svirbely, Joseph L. (Univ. of Pittsburgh, Pittsburgh, PA). AMA Archives of Industrial Health, 16, 393-402 (Unavailable) 1957. CODEN: AMIHAB. ISSN: 0567-3933.

AB cf. C.A. 48, 14047c. Chem. tests and animal exposure show that protection against diborane can be obtained by the use of a chem. cartridge respirator charged with active Hopcalite. Activated C protects against pentaborane, a mixts. of silica gel and active C against mixts. of pentaborane and **decarborane**, and a mixt. of silica gel, active C, and Hopcalite is effective against mixts. of diborane, pentaborane, and decaborane. Protection in all cases is temporary.

CC 13 (Chemical Industry and Miscellaneous Industrial Products)

IT 17702-41-9, Decaborane(14) 19287-45-7, Diborane 19624-22-7, Pentaborane(9)
(gas mask for)